

## Guidelines and Add-Ons for Handling the Dead Bodies of COVID-19 Suspected and Confirmed Cases in India, With Special Mention to the States of Southern Part of India

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### Abstract

**Background:** Onset of COVID-19 infection and with subsequent increase in death related to COVID-19 Infection had been the reason of formulating several protocols, guidelines and orders to handle the dead bodies of confirmed cases or suspected cases. Filling up the knowledge gap had resulted in verbalizing certain protocols, for safe and better disposal of bodies. **Discussion:** This review has been made to compile the guidelines formulated by different agencies and certain changes that are noticed and introduced in each guideline. The guidelines formulated by World Health Organization are one of the earliest. This review also discusses about ICMR (Indian Council of Medical Research) guidelines and the Guidelines formulated by Government of India. Government of Karnataka had also made guidelines and also had introduced certain changes in subsequent protocol for better management and disposal of dead bodies. Discussion had been made on standard precautions that have to be taken throughout handling dead bodies and certain Do's and Don'ts to the family members handling dead bodies. This review has also made elaborate discussion on conduction of autopsy on need basis and categorizing cases requiring autopsy based on above guidelines. **Conclusion:** Standard safety precautions are to be followed throughout the process of transportation; handling and disposal of body at all the stages till burial/ cremation.

**Keywords:** COVID-19 Infection; Guidelines; Standard Precautions; Dead bodies; Autopsy; Government of Karnataka; Government of India

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### Introduction:

Novel Corona virus causing COVID-19 infection was first detected in Wuhan, China on 2019. In India, first case was reported in Kerala state on 20<sup>th</sup> January 2020.<sup>1</sup> The infection is supposed to spread by droplets. The chances of spread of infection from dead bodies are least, but however handling dead bodies as in cases of autopsy where aerosol

production is present, can infect mortuary staff and body handlers. There are several protocols, Guidelines, orders and circulars that are passed in connection of handling and management of COVID-19 infected dead bodies and COVID-19 suspected dead bodies, with several modifications on basis of scientific knowledge and upgradation of knowledge gap that was there about the Novel corona virus. The standard precautions in handling the dead bodies were formulated for the body handlers and for close contacts of dead bodies like family and friends. Protocols to handle dead bodies in case of death in hospital, death at home, death of an unknown/unidentified bodies and autopsy of unnatural death and special precautions that has to be

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taken by the doctors and body handlers are enumerated. There were several issues which we are currently facing in handling some unclaimed dead bodies and issues related to their disposal. The current review has been done to compile the protocols, guidelines and orders that had been passed by various authorities on body handling, with a special mention about orders made by Government of Karnataka and the neighboring states, which had been briefly drafted. Government of Karnataka had brought about some circulars and protocols on need basis based on some lacunae that were present in protocols formulated earlier.

#### **World Health Organization Interim guidelines as on 4<sup>th</sup> September 2020**

World Health Organization (WHO) had given standard guidelines to handle the dead bodies of COVID-19 confirmed cases. It had proposed infection control and prevention strategies for the health care workers, mortuary staff, religious leaders and public health authorities as they are in close proximity with the dead bodies and even have to handle the dead bodies. Although spread of COVID-19 infection is through droplets, or by directly handling lung specimen of infected cases, handling the dead bodies possess minimal risk in contracting with the infection. WHO had stated direct and indirect contact with secretion of infected person possess risk.

Measures like use of body bags of prescribed quality had been mentioned, standard precaution in handling bodies, use of PPEs (eye protection, such as a face shield or goggles, as well as medical mask, gown and gloves) at autopsy, handling body in crematorium/ burial ground and at community level, environmental cleaning and disposal of the waste and belongings of deceased had been described.

Dead body should be handled in a dignified manner by respecting the sentiment of the family and the relatives and by following the religious and cultural believes. Body handlers should make sure of availability of hand hygiene and standard precautions before

attending the body. Protective gears like Personal protective equipment(PPE)'s that has been prescribed and use of N95 masks to be followed, disposal of the used PPEs and mask which is not an issue in hospital settings but same had been recommended at community level which possess problem, causing potential risk of infection transmission.

WHO in the guidelines had mentioned transportation of dead body to mortuary by trained staff, while transporting the body, it shouldn't be disinfected at mortuary area or at any other time, which is controversial as the body will be infective and chances of potential risk of transmission of infection, and it had not conveyed the reason not to disinfect. They had also suggested not all the body requires body bags unless there is secretion oozing from the bodies which is debatable as all the cases has a potential risk of spreading infection.

In the advices to mortuary staff, WHO had recommended not to do embalming, under some circumstances it can be done by trained staff by using PPE; but it has risk of leakage and spread of infection if prescribed body bags are not used and is a potential risk for body handler. WHO had recommended minimal number of persons to be present during the funeral and each maintaining distance of one meter, but has not described the count of minimum number of attendees to funeral.<sup>2</sup>

#### **Ministry of Health and Family Welfare, Government of India Guidelines 15<sup>th</sup> March 2020**

These guidelines were proposed when there were hundred confirmed cases and two deaths due to COVID-19 infection in India. It had proposed the minimal risk in handling dead bodies unless handling the lungs of infective case at autopsy. The body handlers should follow standard precautions like hand hygiene, use of PPEs, handling sharp, disinfect the body, environment and linen. It suggested that all the staff must be trained in infection control and prevention practices.

Staff should follow standard precaution in handling dead bodies. Leak proof plastic body bags must be used to dispose the body. Body bags must be wrapped by mortuary sheet or sheet given by family members. All used linens, instruments and the wastes in the surrounding environment must be disposed in biohazard bags and disinfected with 1% sodium hypochlorite.

Mortuary staff should follow standard precaution while handling and disposing dead bodies. Body to be kept under 4 degrees centigrade. Embalming should not be done, but WHO had given an option in certain cases trained staff can do embalming.

Standard of doing autopsy on infected cases are similar to the proposed guidelines of WHO. Ministry of health and family welfare had highlighted the importance of disinfection and precaution of not doing procedure of aerosol generation. After doing autopsy the body to be handed over to relatives. They have mentioned about proper safety precaution that has to be followed by family and relatives while handling the body, which carry potential risk of infection spread among the relatives.<sup>3</sup>

#### **STANDARD GUIDELINES FOR MEDICOLEGAL AUTOPSY IN COVID-19 DEATHS INDIA 2020, ICMR (Indian Council of Medical Research) Guidelines**

Guidelines are done to protect the doctors, mortuary technicians, and mortuary staff from the COVID-19 infection. To prevent health risk, they had recommended to avoid medicolegal autopsy/ to adopt noninvasive autopsy techniques. Some of the cases which are labelled as MLC (Medico-Legal Case) in the emergency departments as in cases of suicides, accidents and homicides, police will make it as an unnatural death under section 174 CrPC and inquest will be served for autopsy. In case where there is no suspicion police officer in-charge should take proactive measure in waiving off the autopsy. ICMR had categorized cases as confirmed cases and suspected cases based on criteria of laboratory test and with 14 days history of travel, contact

of COVID-19 cases, symptoms of COVID-19 infection, evidence of clustering.

Asymptomatic infected cases, patient in incubation period, unidentified dead bodies should be taken care as positive patients at most precaution to be followed in such situations. Nasopharyngeal swab to be taken for RT-PCR testing in Emergency/ ICU/Ward/ Casualty, in all suspected, uncertain cases before shifting body to mortuary. Status of Covid 19 should be mentioned exteriorly on body bag. If autopsy is must, then care should be taken to avoid aerosol generation procedure. Thorough examination of clothing to be done, External examination should be done, note for color changes like icterus/ pallor, injuries to be recognized like ligature mark, all the orifices to be checked, photographs to be taken, verbal autopsy to be conducted, no viscera to be preserved in suspected cases of COVID-19, Tuft of scalp hairs with roots to be collected in unidentified bodies for DNA.

For any research on COVID-19 cases and samples of COVID-19 cases if collected, ethical clearance from institution as per the research guidelines of ICMR and other health authorities is mandate. Since there are high chances of infection, pathological autopsy requires detail declaration and specific technique, proper consent from next of kins and legal heirs to be taken.

Disinfection of the body and surfaces where the infected cases are in contact is done by 1% sodium hypochlorite; contact time of 15 to 20 minutes is maintained. Ultraviolet ray's disinfectant lamps can be used if available <sup>(4)</sup>.  
**Government of Karnataka, Directorate of Health and Family Welfare Services orders on 17th April 2020**

Due to increase in COVID-19 related deaths, Directorate of Health and Family Welfare had planned certain add-ons for the guidelines. They had proposed a preparedness room in mortuary, availability of PPE kits 6 in number for each body (one for driver, one for helper and four for COVID-19 dead body handlers). There will be a coordinator who will be in contact with the relatives as a counsellor,



medical fraternity are not in contact with relatives. The dead body must be bathed by 1% sodium hypochlorite packed in cloth or plastic covers and kept in zipper bags of prescribed thickness and earmarked before handing to relatives. Proper disinfection of the mortuary area and the vehicle carrying dead body with 1% sodium hypochlorite to be made.<sup>4</sup>

**Government of Karnataka, Directorate of Health and Family Welfare Services orders on 12th May 2020**

Health and Family Welfare had proposed circular on 12<sup>th</sup> May 2020, in which they had explained the prevailing situation of COVID-19 pandemic as a contagious with no available prophylaxis and treatment. For the autopsy surgeons to handle suspected or confirmed cases it is difficult without test, and for the test result it will take 1 to 2 days, creating difficulty in cold storage facility. In this circular they had proposed NON-MLC COVID 19 positive cases, treating doctor to provide cause of death according to ICMR guidelines, they had proposed Nasopharyngeal swab should not be collected unless they have travel history, quarantine history, previous illness with treatment, contact with COVID-19 cases, history of fever, cough and severe acute respiratory distress or shortness of breath. However this condition of not doing nasopharyngeal swab for all cases are controversial as there may be cases of asymptomatic carriers who are potential risk of infection cannot be ruled out. In cases of Brought dead/ Unknown/unclaimed bodies if there is no history of suspicion/foul play/ poisoning/ no external injuries in such cases Forensic experts/ CMO/RMO/Medical officer/ Specialist on duty can issue death certificate stating- "Death due to natural causes cannot be ruled out however exact cause of natural death could not be commented due to existing circumstances" (COVID-19 Pandemic), no objection certificate to be issued by police for relatives. It is advised for Unknown cases time period of 48 hours to be given for identification. For purpose of identification

DNA sample in the form of tuft of scalp hairs with roots to be collected.

If police are not giving "No objection Certificate" and gives inquest papers, cause of death can be given based on clinical history, clinical documents and external examination of body. Proper photographs to be taken by autopsy surgeon. If autopsy is inevitable as in cases of unnatural deaths like Road traffic accidents, hanging, poisoning then standard precautions to be taken as guided by ministry of health and family welfare and partial autopsy can be done.<sup>5</sup>

**Government of Karnataka, Directorate of Health and Family Welfare Services orders on 25<sup>th</sup> June 2020**

This order had been passed to reduce inconvenience to the relatives in taking their beloved one dead body if it is suspected case of COVID-19 as the confirmation of test results will take time till then body will not be handed over to the relatives. In this order body to be handed over even without confirmation of test reports, in case test turns out to be positive, efforts to be made for tracking and contract listing. But disadvantage of this order is difficulty associated with tracing back the contacts.<sup>6</sup>

**Commissioner, Bruhat Bangalore Mahanagara palike(BBMP) 17<sup>th</sup> July 2020**

Commissioner had made certain protocols for handling COVID-19 dead bodies and bodies of suspected dead bodies at hospitals and at home. In case of hospital death of COVID 19 positive case, cause of death should be given in prescribed format, Aadhaar copy (issued by UIDAI-Unique Identification Authority of India) of the deceased for identity to be collected, positive stated test copy to be collected, mandatory updating online to BBMP office, transporting body from BBMP ambulances/Hearse vans by using PPE kits which has to be provided to crematorium staff and body handler by BBMP.<sup>7</sup>

**Government of Karnataka, Directorate of Health and Family Welfare Services orders on 29<sup>th</sup> July 2020**



In prevailing situation of COVID-19 this order had been issued in management of dead bodies. Supreme Court of India had directed to all states the following guidelines. The dignity of dead, cultural and religious sentiments to be maintained. In this guideline they had mentioned testing should not be done in all cases and in COVID-19 suspected cases test to be done within 6 hours. In a study done by Prasad M et al., the SARS COV-2 was detected in an autolyzed and exhumed dead body also, this doesn't justify the time period of within 6 hours for COVID-19 testing in the suspected dead bodies.<sup>8</sup>

Suspected cases after taking swab should be handed over to relatives without delay and standard precautions of handling dead bodies like COVID-19 infected case to be followed. In this guideline the number of people attending funeral should not exceed 20 and they should maintain distance of 2 metres each.

Appropriate recording of the death should be given according to ICMR guidelines. Cause of death has to be given in MCCD (Medical Certification of Cause of Death-Form 4) pattern by writing Immediate and antecedent causes with a note on comorbidities. ICD-10 (International Classification of Diseases-10) code should be used as provided by WHO. If the death is due to suicide and if body turns out to be positive for COVID 19, manner of death to be given suicide or investigation pending if waiting for autopsy. If the person dies due to some other cause where COVID-19 status is not confirmed, COVID 19 should not be mentioned in cause of death.<sup>9</sup>

#### **Government of Karnataka, Directorate of Health and Family Welfare Services orders on 6<sup>th</sup> August 2020**

Certain changes that had been incorporated in the guidelines are, maintaining standard precautions at all time; as much scientific data are not present regarding spread of infection. District authorities/BBMP should deal with the dead bodies on case to case basis, by respecting the sentiment and safety of relatives and dead body handlers. While

disposing the bodies DO's and DON'T's handouts should be given to relatives which includes safe handling dead bodies by maintaining standard precautions, not to embrace, kiss or bathing dead bodies, maximum of only 20 persons to participate in the cremation/ Burial, not to open body bag; viewing of only face of body is allowed by unzipping near face end. Proper disposal of waste and proper disinfection to be followed.<sup>10</sup>

#### **Government of Karnataka, orders on 21 April 2021**

In this order it had been mentioned that after death, COVID-19 infected bodies are kept in ICU, which will result in scarcity of beds for needy so it had been notified that bodies should be disposed by giving Form 4 and necessary documents within half an hour. It had also mentioned that issuing necessary documents is delayed which has to be addressed fast for disposal.<sup>11</sup>

#### **Orders in other South Indian states**

Orders of state of Kerala, Andhra Pradesh and Tamil Nadu are same as they had followed Government of India Ministry of Health and Family Welfare orders of 15<sup>th</sup> March 2020. In Andhra Pradesh the bodies in Red zone are treated as potential positive cases with mandatory testing done by TrueNat test(VLM) and disposing bodies, Positive cases if detected then contract tracking and tracing will be done.<sup>12, 13, 14</sup>

#### **All INDIA INSTITUTE OF MEDICAL SCIENCES (AIIMS) – (An Autonomous Government Public Medical University) Department of Forensic Medicine & Toxicology, New Delhi— Protocol Of Dignified Management Of Covid-19 Dead Bodies**

AIIMS, New Delhi, had given some recommendations for the disposal and handling of infected cases. They had advised for cremation of body, standard precaution at all time, avoiding medical/ pathological and legal autopsy, use of PPE's which are heavy duty e.g. rubber gloves, rubber apron is and

resistant closed shoes. If the body is held for 48 hours body should be stored at 6 degrees centigrade, for longer duration 4 degrees centigrade is maintained with regular temperature check of the refrigeration. If autopsy is performed, swabs to be taken from nasopharyngeal region, oropharyngeal region, lower respiratory tract and both lungs. Formalin fixed autopsy tissue of lungs, airway and major organ to be collected. Oscillating saw should not be used; hand shears to be used as alternative, if oscillating saw used then vacuum should be used to contain aerosol.<sup>15</sup>

### Conclusion:

The spread of the dreaded infection of Covid-19 is by respiratory droplets; however transmission of infection can also occur even to the dead body handlers especially for those staff involved in conduction of autopsy and where there is aerosol generation. The standard safety precautions are to be followed throughout the process of transportation; handling and disposal of body at all the stages till burial/ crematorium. The bodies should be transported and kept in zipper bags with visibility of face, leakages from the body to be properly plugged and body to be earmarked so that handling wrong body can be avoided. Several modifications in the guidelines are made in Government of Karnataka at time-to-time basis to fill up the lacunae present in the guidelines. Ultimate goal is safe and dignified disposal of dead bodies without hurting sentiments of bereaved family members. The proper Do's and Don'ts checklist to be handed over to the relatives for the proper disposal of dead bodies with least risk for body handlers.

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