

## Protocol of Handling Bodies of Deceased of COVID-19

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### Abstract

Large family of Corona Viruses (CoV) includes viruses which cause Common Cold, Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) etc. A new Corona Virus has been identified which causes severe respiratory symptoms. The virus which was not identified as a human pathogen till December of 2019 has reportedly caused pandemic in more than 100 countries across the world. This virus has been named severe acute respiratory syndrome coronavirus 2 or abbreviated as "SARS-CoV-2". The disease that it is producing is named "Coronavirus Disease 2019" or COVID-19 and the viral strain is termed as nCoV. COVID-19 pandemic break out has created chaos among all societies over the globe, as well as in India. Due to its sudden emergence of this disease there is no standard prescribed methodology for its treatment, management, prevention and handling the dead bodies of the patients who succumb to COVID-19. There is stigma and confusion in the society for safe disposal of infected deceased bodies and also there is hindrance among the funeral workers while accepting such bodies for last rites. Authors have gone through all the available guidelines and have tried to make a stepwise methodology considering the socio-economic conditions and religious beliefs prevalent in our country which may help the health professionals and relatives who are dealing with the dead bodies of unfortunate victims of this pandemic.

**Key words:** COVID-19; Dead Bodies; Methodology

### Introduction

Corona Virus family is identified in causing wide spectrum of diseases which are ranging from common cold to severe diseases like Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). A new strain was identified in December 2019 at Wuhan, China which has the potential of different manifestations like common mild respiratory tract infection, respiratory distress due to pneumonia, ARDS,

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renal failure etc. Considering the fast and uncontrollable spread of the disease the World Health Organization has declared COVID-19 as a pandemic. By this time about 6000 persons have succumbed to the new disease all over the globe and about 0.2 million people have tested positive for the virus. Well established treatment protocols, transmission prevention measures are being established. Guidelines for the health care professionals, transporting people, relatives and crematorium attendants who are involved in dealing with potentially contagious corpses of victims dying of COVID-19 are yet to be laid in accordance with available resources, prevalent socio-economic and religious feasibility in different countries including India. As a norm, medico-legal and pathological autopsies should not be carried out on these corpses unless and until substantial grounds are there. If under unpreventable or inescapable circumstances, autopsy is to be performed then strict infection prevention protocols has to be followed and maintained to break the vicious cycle of transmission of disease. This includes cleaning and covering all discharge potential body defects including therapeutic wounds and natural orifices immediately after death, proper packing of body in leak proof body bags, proper transportation of body taking all measures to avoid contamination, proper storage in needed cases, cleaning of all the surfaces which have potential to get in touch with infective body fluids, avoiding the possibility of

relatives and undertakers getting the infection at the place of performing last rites and at crematorium or burial ground. Education of health care professionals and other people who are concerned with taking care of corpses in these cases and the society in large about the scientific methods which can be adopted to prevent further spread of this pandemic is need of the hour in view of authors. All available scientific data are being reviewed to formulate this methodology which is feasible in most of the cases in our country.<sup>1-4</sup> Authors are in view of unfortunate incidents like rejecting the bodies infected with n CoV which was recently reported at one of the crematorium in Delhi should not repeat only because of the lack of knowledge about body handling.<sup>5</sup>

### ***Universal precaution while handling COVID-19 infected dead body***

Based on the exposure of infection and the mode of transmission COVID-19 is covered under category 2 of following precaution while dealing with dead body. The following are the specific precaution which should be strictly followed to avoid self infection and transmission of infection.

- Avoid removing body of the deceased from the plastic body bag
- Embalming is strictly prohibited
- It is advisable to cremate the bodies for last rites
- Maintenance of proper hand hygiene
- Maintaining a desirable social distancing.

### ***Packing and transfer of the COVID-19 dead body***

- Death due to COVID-19 is a Non Medicolegal Case unless and until contrary is proved.
- The deceased must be placed in a zipped body bag immediately after death with identification tag marked 'COVID-19'.
- Ensure that the body is fully sealed in an impermeable body bag before being removed from the isolation room or area, and before being transferred to the mortuary, to avoid leakage of body fluid.
- Transfer the body to the mortuary as soon as possible after death.
- The Medical/Pathological or Legal Autopsy should be Avoided if there is No Substantial Reason.
- If an autopsy is being considered inevitable, the body may be kept in refrigeration in the

mortuary and the autopsy conducted only when a safe environment is available in that mortuary.

- Infected body within 48 hours of death should be stored at a temperature of 6°C or below. If storage is required for a longer period of time i.e. beyond 48 hours then it is advisable to maintain temperature of 4°C. Cold storage should be regularly checked for maintenance of temperature.
- A properly packed and locked body can be safely stored in mortuary for storage and can be sent to crematorium for cremation or burial in a coffin.
- The vehicle used for transporting the body from hospital to mortuary or crematorium should be properly disinfected and decontaminated with 1% Sodium Hypochlorite.
- It should be ensured that the mortuary staff, dealing personnel's and burial team use Standardized International Precautions i.e. maintaining proper hand hygiene, wearing use appropriate Personal protective equipment including long sleeved gown, gloves, facial protection and eye gear to avoid risk of splashes from the body fluids or secretions of dead bodies.<sup>2,3</sup>

### ***Specimens to be collected in case autopsy is unavoidable***

Under circumstances when the autopsy is unavoidable especially in undiagnosed cases it is advisable that the following set of specimens be collected:

- Upper respiratory tract swabs: Nasopharyngeal Swab and Oropharyngeal Swab, Lower respiratory tract swab and lung swab from each lung.
- These swabs should be well marked and labeled; for performing tests of other pathogens separate sample should be collected.
- Sample for histopathological examination e.g. lung tissue, upper airways etc can also be kept after fixing it with formalin.

### ***General guidance for workers/employee in Mortuary***

Mortuary staff and workers are under high risk of infection and must follow the standard protocol

while handling such category 2 infected cases like COVID-19:

- They must avoid direct exposure of infected nasal discharges, body fluids, blood and surrounding environmental surfaces.
- Minimizing and limiting the number of persons required for conducting autopsy.
- Electric oscillating bone should not be used as it increases the chances of aerosol dispersion; alternatively hand tools or shears can be used for removing bones.
- Once the autopsy is completed and body is safely handed over; and before accepting the next body for autopsy, the autopsy room should immediately be cleaned using 1% Sodium Hypochlorite. All the surfaces, instruments and transport trolleys should be properly disinfected with 1% Hypochlorite solution for a minimum period of 10 minutes.

#### ***Personal Protective Equipment for Handling Dead Bodies (PPE)***

- Ensure that the dealing person is wearing a waterproof, long sleeved, cuffed disposable gown to avoid contamination from infected body fluids, blood and secretions. In case there is no availability of gown, a waterproof apron should be worn prior to handling the infected dead body.
- Facial shield, eye protection and medical masks should be used properly to avoid any accidental spillage of fluids over the face.
- Proper rubber gloves, closed shoes or boots are to be worn beforehand.
- Once handling of the infected dead body is complete one must follow proper hand hygiene. It is advisable to take bath to further lower the risks of infection and transmission of the same.

#### ***Precautions to be taken while Performing Autopsy***

In unavoidable circumstances autopsy may be carried out with strict adherence with below mentioned safety measures. Number of professionals should be limited to the minimum as possible. Procedure should be done only in a dissection room which is properly ventilated. It is advised that the professional should wear a scrub dress during the procedure. Disposable surgical

gown with full length sleeve which is water resistant is advisable. If it's available, a plastic apron can be worn along with the gown. Preferably N95 mask should be used. Mask with higher specifications are also acceptable. Two pairs of surgical gloves should be worn by each person who is involved in the procedure. Rubber gum boots with knee height is the ideal feet protection during the procedure. All measures should be taken care of to avoid splashing of fluids during dissection especially that of lungs. All the instruments and surfaces coming in contact with body fluids should be cleaned and disinfected with 1% hypochlorite solution with minimum contact time of 10 minutes and the area should be allowed to dry itself. All the PPE should be removed in the dissection room itself and the safe disposal as per biosafety protocol should be followed without any breach. After removal of the PPE proper hand hygienic methods should be followed.

#### ***Disposal of Hospital Waste***

Waste products of mortuary/hospital procedures in COVID-19 cases should be dealt as risk waste. Every waste product coming in contact with the body fluids should be considered as risk waste and the same should be properly segregated, packed, labelled, sealed and disposed after storage as per the hospital norm for similar products. The health care professional involved in the procedure should make sure the disposal is happening in proper way. Fluids came in contact with the body fluids and be drained to the normal hospital drainage system as in other cases. But it should be confirmed that the water is going to the sewage system and it should not get any access with the ground water. Sharp instruments should be kept with a separate container made for that purpose and the concerned health care professional must make sure about its safe disposal.<sup>6</sup>

#### ***Recommendations***

Proper hand hygiene measures should be performed by everyone who are at potential risk of coming in contact with infective material. Desirable social distancing is 0.5 to 2 meters to avoid droplet transfer which should be followed in all feasible work places. Face masks have to be used especially while sneezing and coughing. Disposable masks should not be used beyond 24 hours. Considering non symptomatic infected people social gathering should be avoided. Avoid touching mucosal surfaces like mouth, nose and eyes as much as possible. Avoid touching your eyes, nose and mouth.

### ***Performance of Last Rites of Deceased dead body of COVID-19***

Once the COVID-19 patient succumbs to death, the medical professionals should hand over the body of the deceased to relatives and friends for last rites assuring that there is no spread of the infection preferably in fluid proof coffin. The methodology to be adopted to make sure that no spread of infection to people who are dealing with the dead body are enlisted below:

1. Handling staff should be appropriately dressed in PPE i.e. rubber gloves, water resistant gown/ plastic apron and surgical mask. Use of eye gear/goggles and face shield to avoid splashes.
2. All tubes, drains and catheters attached to the dead body should be removed before handing over to the relatives.
3. Wound drainage and needle puncture holes should be disinfected, surgically closed and dressed with impermeable material.
4. Secretions in oral and nasal orifices can be cleared by gentle suction if needed.
5. Oral, nasal and rectal orifices of the dead body have to be plugged to prevent leakage of body fluids.
6. Before packing the dead body, it should be cleaned and disinfected using sterilizing agent based on 70% Alcohol or 1% Sodium Hypochlorite.
7. Transfer the body to mortuary at the earliest with body covered in a robust, leak proof zipped transparent plastic body bag which is locked properly using nylon cable zip ties to avoid spillage of any fluids. The plastic body bag should not be less than 150 µm thick.
8. The bagged body should be either wrapped with a mortuary sheet or placed in an opaque body bag.
9. The body bag packing should again be disinfected using the sterilizing agent.
10. Embalming of such bodies should be avoided.
11. Relatives are allowed to view the deceased one last time before last rites after followed standard precautionary measures and unzipping the face end of the body bag.
12. For the purpose of the last rites, cremation should be preferred for the complete elimination of chances of infection in either electric or gas crematorium in situ

in a zipped body bag. However keeping in mind the religious views of the family, if the burial of the body is requested, then it should be assured that the body is buried in a thick, air tight coffin and placed at a normal depth of burial (4 to 6 feet). It is recommended that the area above and adjacent to the grave should be cemented immediately as an additional precautionary measure and space should be marked and required precautions should be taken to avoid scavenging by animals.

13. As a precautionary measure large gathering at the crematorium/burial ground should be avoided to maintain a healthy distancing.
14. The remains of the last rites like ashes do not pose any risk of infection and can be collected for religious immersion.
15. Remove personal protective equipment after handling of the dead body. Then, perform hand hygiene immediately.<sup>7</sup>

### **Conclusions**

Considering the high infectivity of the disease, medico-legal autopsies should be avoided in all cases of diagnosed COVID-19. In hospital deaths corpses should be disinfected immediately after death and the hospital staff should make sure that there is no potential fluid discharge point over the body. After disinfection and sealing of wound and orifice, corpse should be kept inside a leak proof plastic body bag to facilitate transportation. If needed, relatives can see the face for last time after unzipping provided all precautionary measures have been taken. Cremation of the dead bodies is the ideal method of disposal of corpses. However, considering the religious believes prevalent in our country, if relatives opt for burial of the deceased it can be accepted under strict precautionary measures. Body remains in the form of ashes after cremation will not possess any infection threat so the same can be used for any kind of religious rituals.

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