

STANDARD GUIDELINES FOR MEDICO-LEGAL AUTOPSY IN COVID-19 DEATHS IN INDIA 2020



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**STANDARD GUIDELINES FOR MEDICO-LEGAL AUTOPSY IN
COVID-19 DEATHS IN INDIA**

2020

DRAFT



New Delhi, India

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Standard guidelines for Medico-legal autopsy in COVID-19 deaths in India

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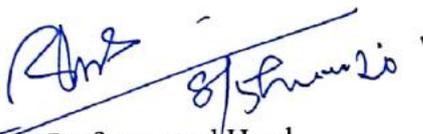
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This brief guidance document has been drafted by Indian Council of Medical Research in consultation with stakeholders in healthcare who are following the outbreak of the COVID-19 infection in the country. It has been specifically produced to aid Forensic experts, Pathologists, Microbiologist, Doctors who are conducting legal autopsy, Mortuary staff, Forensic Laboratory scientist/officers, Social workers investigating Police officers, Morgue van transporters, and Crematoriums dealing with a confirmed or suspected COVID-19 death deceased body. It is an advisory for all of them on the possible health risks associated with such a case and the reduction of these risks health hazards, further spread of disease and Dignified cremation of deceased Body.

The objectives of the document are to:

1. To provide Standard operating procedure for Medico-legal autopsy in COVID-19 cases.
2. To recommend standard Bio-safety precautions for Forensic Pathologists, Health care workers, Mortuary technicians/staffs, relatives, crematorium/burial staff handling COVID-19 dead bodies.
3. To provide guidelines for Safe and Dignified management of COVID-19 dead bodies encompassing preservation, transportation and disposal.
4. Disinfection & sterilization of Mortuary.
5. To provide further deliberations on Bio-safety guidelines/required resources for Safe medical autopsy and research in COVID -19 death cases.

These guidelines have been specifically prepared from the viewpoint of conducting safe Medico-legal Autopsy with no invasive surgery in COVID-19 deaths. The facilities and resources differ between different Healthcare institutes, Hospital and Autopsy centre and between different clinical departments of same Institute. Hence, each Healthcare institute and each clinical department must customize their respective guideline accordingly, using Indian Council of Medical Research guideline as rational format.


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**STANDARD GUIDELINES FOR MEDICO-LEGAL
AUTOPSY IN COVID-19 DEATHS IN INDIA**

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Section I: Introduction

The Coronavirus Disease-2019¹ caused by the novel coronavirus COVID-19 was first reported in late 2019 at Wuhan city, China. World Health Organization on 30th January 2020 declared the outbreak of COVID-19 as a Public Health emergency of International concern. There are currently over three million cases reported worldwide and a quarter million deaths. On 30th January India reported its first case of COVID-19 in Kerala and since then over 59000 laboratory confirmed cases and over 1900 deaths due to SARS CoV 2 in India have been reported. The Doctor's, Mortuary Technician and other Mortuary Staff in Mortuary performing Autopsy are exposed to potentially high and dangerous health risks to organs fluid and secretions, even after taking the highest precautions. Hence, No Invasive Autopsy Technique should be adopted for Forensic Autopsy. **The deaths in hospital and under medical care due to COVID-19 is a Non-MLC case and doesn't require postmortem examination and the required certification of death is being done by treating doctors.** Some of the cases of suspected COVID-19 death which are brought dead to hospital are labelled by emergency doctors as MLC and body is sent to the mortuary and Police are informed which may need postmortem examination. Some of the cases are suicide, homicide or accident and maybe COVID-19 positive or suspected case of COVID-19. *As per 174 (3)(V) CrPC "the police officer for any other reason considers it expedient so to do, he shall, subject to such rules as the State Government may prescribe in this behalf, forward the body, with a view to its being examined, to the nearest Civil Surgeon, or other qualified medical man appointed in this behalf by the State Government, if the state of the weather and the distance admit of its being so forwarded without risk of such putrefaction on the road as would render such examination useless."*

According to this after the inquest procedure, if any crime is not suspected, police have the authority (as per section 174 CrPC) to waive off conduction of medico-legal autopsy, even though labeled as Medico-legal case. The investigating Police officer must proactively take steps to waive off unnecessary autopsies during such pandemic situation. This provision needs to be used prudently based on Police officers investigation findings and Forensic Doctor's advice. These guidelines are based on the current understanding about modes of transmission of COVID-19 sensitivity of the diagnostic tests, international autopsy guidelines and knowledge about infrastructure and logistic strength of common mortuaries in India.

Section II: Case categorization of dead bodies

Categorization according to case risk assessment and dealing with cases accordingly is the key in minimizing the possibility of spread of infection. According to COVID-19 infective status, dead bodies brought for medico-legal autopsy can be categorized as below:

- a) **Confirmed Case:** Cases with Nucleic acid positive by RT-PCR technique for COVID-19 infection (OR) High homology for COVID-19 infection by viral gene sequencing.
- b) **Suspected Case:** Cases having at least one of the epidemiological history features and 2 clinical features (OR) 3 clinical features of COVID-19.

Epidemiological history: 14 days prior to the onset of symptoms:

- Travel history or residence in areas declared COVID-19 hotspots.
- Contact with COVID-19 infected cases.
- Exposure to patients with fever or respiratory symptoms in COVID-19 hotspots.
- Evidence of clustering.

Clinical features:

- Fever and/or respiratory symptoms
- In early onset, total WBC count normal or decreased, or lymphocyte count decreased
- Imaging characteristics of COVID-19 as small patchy shadows and interstitial changes, especially in lateral lung
- Ground glass opacities and infiltrates were seen subsequently in bilateral lungs
- Lung consolidation in severe cases.

Asymptomatic infected persons, patients in incubation period, unidentified dead bodies and cases with negative result may not meet the diagnostic criteria for suspected cases, but should be treated as suspected COVID-19 death cases as false negative result is not uncommon.

Section III: Safety and Precautions in Dead body packing in Hospital ward/ICU/ Emergency Ward and transport of the dead body to mortuary

All the Designated COVID-19 Hospital should have a dedicated Mortuary Services or and earmarked Mortuary with dedicated Transport Facility.

A) Packaging of Dead Body in Hospital ward/ICU/ Emergency Ward:

It is advisable to collect Nasopharyngeal swab at the emergency department/casualty/ward/ICU and should be sent for COVID-19 RT-PCR test in all Suspected/ Latent/ Unascertainable cases before moving the body to mortuary for preservation if the same was not sent in due hospital course. SARS-CoV-2 RNA may still be detected up to 3 days postmortem and possibly longer based on available data from experiences with MERS-CoV and SARS-CoV; however sensitivity may be reduced with a longer postmortem interval). If any delay is expected in sending the sample to laboratory, then store specimen at 2-8°C for up to 72 hours after collection. If further delay in testing or shipping is expected, store specimens at -70°C or below

- Cause of Death along with body handover slip and Death report should be prepared by treating Doctor.
- The body should be shifted after making proper entry in the nursing log books.
- The Nursing Officer with assistance from hospital attendant will pack the dead body in double packing in a Zipped Body Bag.
- A transparent body bag is preferable, so that the body can be identified by relatives/police/administration etc. If transparent bag is not available, the packing should be done in such a manner that the face can be shown to the relatives/police/administration with minimum movement of the bag and body.
- All tubes, drains and catheters on the dead body should be removed.
- Any puncture holes or wounds (resulting from removal of catheter, drains, tubes, or otherwise) should be disinfected with 1% Sodium hypochlorite and dressed with impermeable material.
- Apply caution while removing and handling sharp devices attached to the body. They should be disposed into designated containers for sharp hospital wastes.
- Plug oral and nasal orifices of the dead body to prevent leakage of body fluids.

- The exterior of the body bag should be decontaminated with 1% Sodium hypochlorite.

B) Transport of Dead Body to Mortuary:

- The status of COVID-19infection should be clearly mentioned on the exterior of Body packing.
- The trolley, on which the body is to be shifted, must be disinfected before it is taken out from the ICU/ward/emergency.
- If death occurs in ICU/hospital ward/emergency, the HCW working in the respective areas should hand over the trolley carrying the dead body to the staff outside of the respective area. **Under no circumstances should the HCW working in the COVID ward/area carry the dead body to the mortuary or any other place.**
- The HCW who is going to shift the body to the mortuary should be wearing mask, overall and gloves at all times. Complete PPE kit is not required for transport of dead bodies, if they are packed properly.
- The body should be shifted to Mortuary earmarked for preservation.
- All PPE for handling these dead bodies i.e.,N95 masks, coverall, goggles, head cover and shoe cover.This is because shifting in mortuary requires direct handling and lifting of the body by the staff.
- To minimize the number of people involved in handling the dead body, the mortuary staff who is entrusted with the duty of shifting the dead body to the autopsy hall should be the one who assists during the autopsy.
- The vehicle/Trolley after the transfer of the body to mortuary shall be decontaminated with 1% Sodium Hypochlorite.

C) Preservation in cold chamber:

- The existing mortuary facility for body storage should be strictly divided into COVID-19bodies and Non COVID-19bodies.
- A proper log book should be maintained for receiving and preserving the body in Mortuary, clearly recording the COVID-19 infection status.
- If feasible, a separate cold chamber/ cabinets shall be allotted collectively for COVID-19positive, suspected, latent and unascertainable cases.

- At places where this is not possible due to lack of adequate facilities, the existing cold storage should have dedicated storage chambers/bays/trays for Covid-19 bodies.
- The Covid-19 positive bodies should preferably be preserved in lower chambers, to prevent spillage of body fluids or other material due to lifting and tilting of the body.
- Suspected/ Latent / Unascertainable Cases: In cases if preservation is needed, dead body can be transferred in the sealed, disinfected, leak-proof body bag with proper tag depicting COVID-19 test status (COVID-19 RESULT AWAITED) along with other Identification details of the deceased like Name, Age, Sex etc.
- Dead bodies should be stored in dedicated cold chambers maintained at approximately 4-8°C.
- The cold chamber must be kept clean. All surfaces, instruments, door knobs and transport trolleys should be properly disinfected with 1% Sodium hypochlorite solution after handling each body.

D) Precautions at Mortuary before handing over the body to relatives:

- Handling staff or morgue attendant should take standard precautions including wearing gloves, water resistant gown/ plastic apron over water repellent gown, and surgical mask. Use goggles or face shield to protect eyes, if there may be splashes.
- Before packing the dead body, it should be cleaned and disinfected using sterilizing agent based on 70% Alcohol or 1% Sodium Hypochlorite.
- The body should be handed over preferably 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.
- The bagged body should be preferably either wrapped with a plastic sheet or placed in an opaque body bag.
- The body bag packing should again be disinfected using sterilizing agent (1% Sodium Hypochlorite).

Section IV: Forensic autopsy in suspected & Positive COVID-19 deaths in India

- **Death due to COVID-19 is a non medico legal case.** The death in hospital or under medical care due to COVID-19 is a non medico legal case and no Forensic Autopsy will be conducted. The certification of death and issuance of Medical Certificate of Cause of Death (MCCD) will be done by the treating doctor of the hospital.
- **Some of the cases of suspected death due to COVID-19 virus** are brought dead in hospital and are labeled as medico legal case by the emergency doctor on duty and the body is sent to mortuary as MLC case and police is informed, which may need post mortem examination for clarity in the cause of death and differentiating between MLC and Non MLC case. The Forensic Autopsy of these cases may be waived off.
- Some cases which are homicidal/accidental/suicidal and may be COVID-19 Positive or Suspected COVID-19 Positive. If the deceased dies in the hospital, the clinical records and all the history may be sent along with the body for Forensic Autopsy.
- **The procedure of Conducting Forensic Autopsy:** Forensic Post Mortem Examination is an inquest based medical examination vide sec 174 CrPC and 176 CrPC and inquest itself contains panchanama, statements from witness and all other allied circumstantial evidence details. Dissection of bones and tissues will generate aerosol which may lead to spread of infection. On the basis of same along with general examination, external examination, examination of clothing, multiple photographs and verbal autopsy (as depicted by WHO) and criteria of elimination and exclusion, the Post mortem should be conducted strictly avoiding any invasive surgical procedures and avoiding splashing of body fluids contact for staffs, body handlers and doctors conducting post mortem.
- **External Examination of deceased body:** An external examination is done after thorough examination of the clothing. During this procedure the autopsy surgeon has to look for all the possible signs and symptoms present over the body apart from rigor mortis and post mortem lividity. Following should be mandatorily examined: Any abnormal discoloration, icterus/anaemia/pigmentation, visible injuries, visible injury which may cause death like ligature mark etc, all natural orifices, visible injury inside

oral cavity, any deformity or disfiguration which is fresh, signs of ascites/effusion/edema etc.

- **Clothing examination of deceased body:**

The clothing should be examined for any suspicious cuts or stains. Detail description of the clothing, both external wear and internal wear, should be photographed and documented including mention of colour/type/any accessories like ring or nose pin or allied articles. Any suspicious stains or cuts should be marked over the cloth and photographed. Clothing should be photographed and if need be should be preserved

- **Still Photographs of dead body:**

Full body photograph from top with clothes intact, full body photograph both back and front after removal of the clothes, close up view of face, neck, anterior and posterior abdomen, lateral part of chest and abdomen, both limbs (anterior and posterior), posterior part of trunk after removal of clothes.

Close up view of any injury/disfiguration or any significant findings, close up view of nail beds, eyes, inner aspect of lips, natural orifices (in case of any significant findings). Photograph of any significant finding contributing to the cause of death.

The photographs later on can be submitted with the Post Mortem report or can be preserved as part of Medico legal reports, to be produced whenever required by the Court of Law or the IO.

- If available digital X-ray may be taken of the full body in case of suspected bony injuries in concept of Virtual and Verbal Autopsy. (Keeping in mind adequate precautions to avoid any unwanted movement of body)
- The biological samples are highly contagious and dangerous to be sampled and preserved. In India, no Forensic Laboratory or Virology laboratory has been earmarked/have biosafety mechanism for examination of such contagious samples. Hence, it is strictly prohibited for any tissue or biological samples to be preserved in such cases. No viscera will be preserved in any suspected COVID-19 positive case.
- In case of unidentified and unknown dead bodies, the facial and multiple body photographs, finger prints of both hands, bunch scalp hairs by combing or by extraction by forceps; should be preserved for later identification.
- In case of post mortem which are conducted in small post mortem centers by non forensic doctors, where he has confusion, he should consult the forensic doctors

posted in dedicated nearby COVID-19 hospital mortuary, or the police officials should be insisted to shift the body to the COVID-19- hospital mortuary.

- An appropriate log book of who is entering the autopsy room (HCW or any other staff) should be maintained as it is easier for tracing in case is required later.

Section V: Ethical Aspect for Forensic Autopsy

- **Ethical aspect for Forensic Autopsy;** It is a Legal Procedure conducted on request of police officers for the Justice delivery system. The body is in the custody of Police and no consent is required from relatives for conduction of Autopsy. All the Ethical, Legal and Confidentiality aspects are already in place while conducting an Autopsy and same should be followed. While handing over the body the relatives may be counseled by the doctor regarding any apprehensions about the Cremation/Burial of Body.

Note: Though these guidelines do not cover the aspect of Pathological Autopsy, the ethical concerns involved in research with COVID-19 samples that may be involved are as follows:

Any research study should be conducted after the proper ethical clearance from respective Institute and as per the established Research guidelines of ICMR and other Health Authorities. The informed consent and other ethical Aspects like confidentiality, religious sentiments etc should be addressed per the specific objectives and methodology of Study.

- The Doctor's, Mortuary Technician and other Mortuary Staff in Mortuary performing Autopsy are exposed to potentially high and dangerous health risks to organs fluid and secretions, even after taking the highest precautions. Hence, the pathological Autopsy requires a detail deliberation, since in literature some special techniques has been devised for doing this autopsy.
- Institutional Research and Ethical committee clearance should be obtained for the research work as per current National Ethical Guidelines for Biomedical and Health Research involving Human Participant (2017).

- Proper informed written consent should be obtained from the next of kin or the legal guardian of the decedent as per current National Ethical Guidelines for Biomedical and Health Research involving Human Participant (2017).
- The autopsy proceedings under such circumstances should be done by Pathologists in collaboration with treating doctor.
- Facilities of Department of Forensic Medicine/ Hospital Mortuary can be utilized for obtaining specimens of internal organs as per the interdepartmental working protocols in practice at the institute.
- All the prescribed infection control measures for dealing with a dead body with COVID-19 infection should be followed.
- Tissue processing and storage facilities of different departments should be identified which can strictly adhere with safety guidelines for preventing the spread of COVID-19 infection control practices and as per the interdepartmental working protocols in practice at the Institute.
- Autopsy procedure should be strictly limited to the scope of consent obtained and which is absolutely necessary for the research work concerned.
- For collection and storage of any biological material for research, adequate safeguards related to informed consent from Legally Authorized representatives, ensuring protection of privacy and confidentiality, other cultural or religious sentiments should be taken care off. There should be clarity on the purpose and duration of sample storage and if the sample would be anonymized or linked to identified information.

Limited studies have been conducted on postmortem samples of patients which died due to COVID-19. The studies have indicated that lung tissue manifest significant pathology which includes alveolar exudative and interstitial inflammation, proliferation of alveolar epithelium and formation of hyaline membranes. Most of the pathological studies are in consensus with the clinical features and clinical course of the disease in general. But the disease also gives pathological damages at organs like heart, liver, kidney, Brain, vessels and other organs. A Dedicated core research group should be created comprising of specialists from Pathology, Microbiology, Biomedical research, Anatomy, Forensic Medicine and other interested clinical departments to assess the resources, feasibility, infrastructure assessment, identifying the research objectives, establishing the Biosafety laboratories and Ethical aspect.

Section VI: Embalming

Embalming of all the COVID-19 confirmed or suspected deceased bodies should not be performed to avoid risk of infections and relatives should be counseled to cremate/bury the body at place of death. If Embalming has to be done for unavoidable reasons, it should be done with minimal invasive technique

Section VII: Disinfection & sterilization of mortuary

The human coronaviruses can remain on various surfaces for varying period of time, which can be as high as 9 days. In experimental conditions, the Covid-19 virus has been found on various surfaces up to 72 hours. The following methods should be employed for the cleaning of the mortuary:

- The mortuary must be kept clean and properly ventilated at all times. Perform autopsies in an adequately ventilated room, i.e. at least natural ventilation with at least 160L/s/patient air flow or negative pressure rooms with at least 12 air changes per hour (ACH) and controlled direction of air flow when using mechanical ventilation.
 - Lighting must be adequate.
 - Surfaces and instruments should be made of materials that can be easily disinfected and maintained between autopsies.
 - Autopsy table, instrument, equipments and other materials used during autopsy must be disinfected using 1% Sodium Hypochlorite or 70% ethanol. Wherever possible, the surfaces should be washed first with soap and water before being cleaned with bleach or ethanol.
 - The mortuary floor and surroundings should be disinfected by using 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry. The solution should be freshly prepared and discarded after every four hours
 - Personnel who are doing the cleaning must be in complete PPE kit, without which the cleaning should not be undertaken.
 - All the waste that is generated during autopsy, both biological as well as other (e.g. PPE kits) must be disposed of as per the hospital's waste disposal policy.
- I. Procedure for preparation of 1% Sodium Hypochlorite solution with 10% concentration:
- a. Take 1 part Sodium hypochlorite (10%) solution

- b. Take 9 parts of tap water
- II. Procedure for preparation of 1% Sodium Hypochlorite solution with 4% concentration:
- a. Take 1 part Sodium hypochlorite (4%) solution
 - b. Take 3 parts of tap water

Contact Time for Disinfection: 15-20 minutes

- **Floors:** 2 Step Cleaning Procedure (Detergent and 1% Sodium Hypochlorite). Mop the floor starting at the far corner of the room and work towards the door.
- **Rest all surfaces:** 1% Sodium Hypochlorite. Damp dusting should be done in straight lines that overlap one another

Ultraviolet ray disinfection lamps can further be used if available for 1 hour for irradiation disinfection after vacating the room.

Section VIII: Safe transportation of dead body of COVID-19 death

A. Transportation by Road:

By road transportation is done through hearse vans having portable cold chamber where the temperature of the chamber is maintained at 4 to 8 degree Celsius. The duration of transport without embalming is safe up to 72 hours.

Body packing during transportation:

- The body should be tightly wrapped in plastic sheet and then packed in leak proof double body bag.
- The body bag should not be opened and no religious rituals should be performed in between or at the venue.
- The body handlers should wear complete PPE like coverall, N95 masks, gloves, shoe cover and head cover while loading and unloading the dead body.

B. Air transport of COVID-19 Death Patient: In unavoidable circumstances, the government may ask for safe embalming by higher Medical Centre.

C. Importation of COVID-19 death patients¹⁰:

For transportation of dead body by air or in case of death of a person on-board, the standard operating protocol as described in the Standard Operating Protocol for Airport Health Officer can be followed.

Section IX: Handing over of Positive or Suspected COVID-19 dead Bodies to the relatives

Covid-19 is a highly infectious agent. Its high infectivity and absence of any cure at present makes it a deadly disease. Once all the legal formalities have been done, the question that comes is whom and how to hand over the dead body. Due to its highly infective nature, it has been observed that many times the relatives of the deceased are in isolation/quarantine. So, getting them to receive the dead body and perform the last rites can put them and other people at risk of acquiring the infection.

Death is a highly emotional event. The loss of near and dear ones is a highly stressful event for the family members. In such times, it becomes difficult to manage how the deceased's relatives will behave on receiving the dead body. At most of the places, there is legal limit to the number of people who can be present either in the mortuary or in the burial/cremation grounds. Keeping these situations in mind, the following guidelines have been prepared to ensure proper and dignified disposal of the dead.

- **If the Covid-19 test report is awaited, the dead body must not be released from the mortuary until the final report is received.**
- The dead body must be handed over to the district administration.
- The medical superintendent of the hospital must coordinate with CMHO/District Collector for formation of task force that can oversee the whole process without causing undue delay.
- As soon as a patient is sick in the ward/ICU/emergency, or the autopsy is going to be started, the local administration should get active, so that if and when the need arise, the administration is ready with vehicles to transport the body, as well as having relatives of the deceased available nearby.
- At no time, more than two relatives must be present near the body and they must maintain a distance of at least 1 m from the body.
- The dead body must be identified by the relatives through the plastic bag, without opening the bag, and it must be done in the presence of law enforcing agencies.

- The dead body must be taken to the burial/cremation ground in presence of law enforcing agencies, where not more than five relatives of the deceased should be allowed.
- Large gathering at the crematorium/ burial ground should be avoided as a social distancing measure as it is possible that close family contacts may be symptomatic and/ or shedding the virus.

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Section X: Legal responsibility of Unclaimed/Unknown or The family members are not in position to collect the dead bodies of COVID-19 positive or suspected Deaths

Due to social stigma related to COVID-19 death, ill health or Medical Quarantine, the relatives may not come forward to claim the body and receive the same for cremation. In many cases relatives may not be able to be present in person at the hospital due to their health condition, geographical or transportation barrier. Under such circumstances, dead body could be disposed by the hospital authority in consultation with Police/ local administrative authorities after informing and taking consent from the relatives of the deceased.

Section XI: Precautions to be taken at crematorium / burial ground

- In case of large number of deaths, both incineration and burial are recommended methods for safe disposal of dead bodies however the Government's decision of incineration or burial may be taken in **the** best interest of public health at large.
- In case of burial upper surface should be cemented and earmarked.
- The body must be cremated in electric crematorium, wherever possible, so that the movement and handling of the body is minimized.
- While handing over the body, relatives should be sensitized that the deceased was COVID-19 Positive or Suspected so that they can adhere to the safety precautions like wearing gloves, masks, gowns and cremate/ bury the body along with the zipped body bag, perform hand hygiene before and after handling the dead body.
- Viewing of the dead body may be done by through the body bag itself. If the body bag is opaque, then the viewing can be done by unzipping the face end, ensuring that a minimum of one meter distance is maintained between the deceased and the viewer.
- The relatives should also be counseled regarding avoidance of large gatherings at the crematorium / burial ground as the number of people coming in contact with an infected body should be limited in order to decrease more people getting direct contact.

- Religious rituals which requires touching the bodies should be avoided like bathing, kissing and hugging etc. of the dead bodies.
- Religious rituals such as reading from religious scripts, sprinkling holy water and any other last rites that does not require touching of the body can be allowed.
- The ash does not pose any risk and can be collected to perform the last rites.
- The crematorium/burial staff should adhere to the safety precautions like wearing gloves, masks, gowns and health precautions like hand washing.

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Section XII: Psychosocial support to Family Members in Dealing with COVID-19 death

Death is almost always associated with emotional turmoil, whether it is expected or sudden. Those who are bereaved, goes through series of grief reactions, which according to Kubler-Ross (1969), follows five stages: denial, grief, anger, depression, and acceptance. Although these reactions are natural and helps in the mourning process, it must be sensitively handled. Doctors managing patients with COVID-19 battling for life, are one of the most immediate witnesses of deaths. Especially, those from forensic medicine, are closely involved in management of dead bodies and the bereaving family members. Informing the family members or relatives about death of patient with COVID-19 and the management of their emotional reactions throughout the process, is often the prime responsibilities of the doctors and is often perceived to be a stressful experience. An understanding of the appropriate ways of handling the situation sensitively helps in performing the task effectively.

For the purpose of simplification, the role and responsibilities performed by doctors in Forensic Medicine can be subdivided into two major categories where first is to be practiced while interacting with the family member of deceased COVID-19 patient and second one is for the doctor themselves.

Facilitating Grief Reactions

It is important to understand that many traumatic stress reactions are expressed through bodily gestures and emotions. For any doctor, witnessing a bereaving family member is the most critical part of the management. It demands a need for a sensitized approach for which many professionals may feel unprepared or challenging. Some of the essential ways of facilitating adaptive grief reactions are as follows:

- a. **Allow free Flow of Emotions:** It is important for the doctor to know that it is absolutely normal to experience emotional turmoil (example- feeling of sadness, anger, abandonment, anxiety, stress) in response to losing anyone, especially compounded due to the complications associated with COVID -19. Though witnessing a bereaved human can naturally incline an individual towards providing any form of support within reach. However, it is professionally advisable to refrain from doing so (without appropriately knowing the family context, their ways of responding to trauma or the severity of trauma). Maintain the psychological presence with the family. Allowing the

uninterrupted expression of emotion is in itself an intervention, or a part of the human process to adjust to the new reality in life. Encourage them to talk about the patient's illness, and if they open up, try to explain the efforts taken to save him/her and the inevitable outcome. Moreover, the doctor can further reduce the need for initiating active intervention by explaining themselves that mourning to the grief is a gradual process and may take a lot of time and efforts for the family members. Letting an individual to actively engage in expression of trauma marks the beginning the mourning process and they must go on till a person gathers strength and courage to engage in the cremation process.

As a cautionary note, it may happen many times, that during an emotional upsurge, the family member can argue or blame the doctor or the treatment team. It is important to understand that it is manifestation of the acute emotional turmoil they are going through currently and there is absolutely no need to provide any explanation for the same or engage in any further argumentation.

- b. **Facilitating Acceptance of the Reality:** As discussed in previous point, its significant to process trauma, and denial or disbelief can block this process of adjustment. Thus, to facilitate acceptance of the death, doctor can arrange for viewing the body bag till face and let family members spend some time with it to sink in reality. Spending time with the body of a loved one who has died helps mourners truly and fully acknowledge the reality of the death with all necessary and prescribed safety and precautions. It also provides a precious last chance to say goodbye “in person.”

Doctor should explain family members about all the safety and precautions while maintaining the full dignity of deceased body. The doctors need to emphasize on religious rituals which requires touching of the dead bodies should be avoided like bathing, kissing and hugging etc.

- c. **Appoint a Supportive Family Member to Facilitate the Recovery:** To facilitate recovery, doctor can designate a support person of the family (the one who appears to be most composed during the crisis) to provide necessary help and assistance to the family members throughout grief process. Further, grieving process usually involves holding funerals which is one of the most culturally acceptable ways of coping with grief. Since COVID-19 pandemic may deprive bereaved of this important step,

support person, or anyone more familiar with the technology can be suggested to hold tele-funerals such that family members feels a sense of comfort in virtual social connections.

As an immediate next step, the appropriate hospital staff should assist the relatives in completing the formalities like filling the forms or other details of deceased so as to obtain a death certificate etc. Precautionary steps which must be followed throughout the cremation process may be re-explained clearly. And finally, ensure smooth and timely handing over the body of deceased along with valuables and personal belongings.

2. Practicing Self-Care:

It is crucial for the clinician or staff specially in the event of COVID-19 related death, to be aware of the concept of vicarious trauma in professionals. Vicarious trauma refers to the experience of a clinician who develops a traumatic reaction, secondary to the client's traumatic experience. It can be manifested in multiple ways such as feelings of helplessness, lack of trust in others, social withdrawal, becoming easily emotionally upset, vague feelings towards people and events, loss of connectedness to others and the self, hyper vigilance and difficulty to experience joy and happiness. Also called as spilled over effect, the experiences often build within the context of compassion fatigue created by the trauma of helping others in distress, which leads to a reduced capacity for empathy toward suffering in the future. Since, it has deleterious impact on mental health of the doctor as well as their clinical practice, it is essential to deal with it by regularly engaging in self-care which includes:

- a. Nourishing Physical Health:** engaging in activities which helps doctors to remain healthy and fuels them with enough energy to get through the day. This includes eating healthy at regular intervals, maintain sleep hygiene and going for walk.
- b. Nourishing Emotional Health:** As it is significant to maintain physical hygiene, so it is crucial to nourishing one's emotional health. This can be done by engaging in frequent ventilation of emotions with loved one/ trusted support person which includes addressing emotional pain and receiving support for the same. Engaging frequently in pleasurable activities which adds richness and meaning to life further helps in ensuring emotional well-being.

- c. **Nourishing Social Health:** Everyone has need for connectedness and building meaningful social relationships. Finding some quality time for loved ones and people who are significant in one's life, nourishes the need for nurturance and belongingness.
- d. **Enhancing Coping Mechanisms:** Doctors can actively invest in employing adaptive coping to stressful situations in their lives. Adaptive coping mechanisms involves confronting problems directly. For example, making reasonably realistic appraisals of problems, recognizing and changing unhealthy emotional reactions, employing problem-solving and positive reinterpretation strategies.

Section XIII: Conclusion

Autopsy is a legal requirement. All the activities associated with it are also legal requirements which need to be performed according to the law of the land. However, law provides that autopsy should be conducted only when required. Considering that, unnecessary autopsies must be avoided. Further, all the personnel associated with the care of the dead, from doctors to mortuary staff, to hearse van drivers and crematorium/burial ground staff should follow the precautions so that everyone can do their duty in good health

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