

Editorial

A Comprehensive Analysis of the Various Guidelines Related to Medico-Legal Autopsy and Dead Body Management in Wake of Covid-19 Pandemic

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ABSTRACT

Introduction: The ICMR guidelines released recently have prescribed autopsy waiver in cases of covid deaths. A reference has been made to section 174(3)(v) of CrPC justifying no requirement for autopsy in cases of natural deaths due to Covid-19. Non invasive autopsy including verbal autopsy protocol of WHO, external examination of the body and virtual autopsy techniques have been cited as the modalities to replace traditional autopsy in such cases. This article explores these options and some grey areas related to them. It aims to analyze and make a critical appraisal of these guidelines vis a vis practical encumbrances attached.

Key Words: ICMR, Autopsy, Covid-19, WHO, Virtual autopsy

INTRODUCTION:

SARS-CoV-2 is a positive-sense single-stranded RNA virus.[1] The WHO has designated the infection as a Public health emergency of international concern owing to the pandemic nature and expeditious spread with significant mortality, especially in older population. Human-to-

human transmission of SARS-CoV-2 was confirmed on 20 January 2020.[2] Transmission occurs primarily via respiratory droplets from coughs and sneezes within a range of about 1.8 metres.[3] Indirect contact via contaminated surfaces is another possible cause of

infection. Preliminary research indicates that the virus may remain viable on plastic (polypropylene) and stainless steel for up to three days, but does not survive on cardboard for more than one day or on copper for more than four hours; the virus is inactivated by soap, which destabilises its lipid bilayer.[4]

India has also released various guidelines from time to time to secure her healthcare workers on one hand, and also limit spread of the virus on the other. This article focuses on the guidelines by various bodies/agencies viz. WHO, MoHFW GoI, ICMR, etc related to medico legal autopsy and the dead body management.

As per the Advisory Committee on Dangerous Pathogens (ACDP), Covid-19 (from China 2020) has been grouped as Hazard group-3 pathogen.[5] Below is a list of HG-3 pathogens. (Table 1)

Table 1: HG-3 pathogens[5]

- Rabies and Lyssa
- Middle East respiratory syndrome coronavirus
- Severe acute respiratory syndrome coronavirus
- COVID-19 (from China 2020)
- Acute haemorrhagic conjunctivitis
- Poliovirus
- Lymphocytic chorio-meningitis
- Rift Valley fever
- Dengue viruses

- Japanese encephalitis
- Tick-borne encephalitis
- West Nile fever
- Yellow fever and yellow fever inactivated virus vaccine
- Hepatitis viruses B, C, D and E
- Monkey pox
- Human T-cell lymphotropic viruses 1 and 2
- Human immunodeficiency viruses 1 and 2
- Chikangunya virus

In India, diagnostic laboratory work (e.g. nucleic acids, sequencing, NAAT, PCR, isolation of antibodies, serum proteins) should be conducted in laboratories with facilities and procedures equivalent to BSL-2.[6] Biosafety levels are a set of biocontainment precautions necessary to isolate dangerous pathogens in a laboratory set up. They range from BSL-1 to BSL-4. Biosafety level 3 is appropriate for work involving microbes which can cause potentially fatal disease via the inhalation route. This is desirable for Covid-19.

As per ICMR, Non Invasive Autopsy Technique should be adopted for Forensic Autopsy. Death in hospital or under medical care due to COVID-19 is a Non Medico legal case and doesn't require a medico-legal autopsy and the required certification of death have to be done by treating doctors. It further expands its purview by

referring to section 174 (3) (IV) CrPC 1973 which is as follows

Section 174 in The Code Of Criminal Procedure, 1973 [7]

174. Police to enquire and report on suicide, etc.

(1) When the officer in charge of a police station or some other police officer specially empowered by the State Government in that behalf receives information that a person has committed suicide, or has been killed by another or by an animal or by machinery or by an accident, or has died under circumstances raising a reasonable suspicion that some other person has committed an offence, he shall immediately give intimation thereof to the nearest Executive Magistrate empowered to hold inquests, and, unless otherwise directed by any rule prescribed by the State Government, or by any general or special order of the District or Sub-divisional Magistrate, shall proceed to the place where the body of such deceased person is, and there, in the presence of two or more respectable inhabitants of the neighbourhood, shall make an investigation, and draw up a report of the apparent cause of death, describing such wounds, fractures, bruises, and other marks of injury as may be found on the body, and stating in what manner, or by what weapon or

instrument (if any); such marks appear to have been inflicted.

(2) The report shall be signed by such police officer and other persons, or by so many of them as concur therein, and shall be forthwith forwarded to the District Magistrate or the Sub-divisional Magistrate.

(3) When-

(i) the case involves suicide by a woman within seven years of her marriage; or

(ii) the case relates to the death of a woman within seven years of her marriage in any circumstances raising a reasonable suspicion that some other person committed an offence in relation to such woman; or

(iii) the case relates to the death of a woman within seven years of her marriage and any relative of the woman has made a request in this behalf; or

(iv) there is any doubt regarding the cause of death; or

(v) 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.

(4) The following Magistrates are empowered to hold inquests, namely, any District Magistrate or Sub-divisional Magistrate and any other Executive Magistrate specially empowered in this behalf by the State Government or the District Magistrate.

The ICMR guidelines concludes that the police officer must proactively take steps to waive off unnecessary autopsies during this pandemic situation by conveniently utilising the interpretive analysis of the above.[8] Such a practice is however fraught with dangers.

A collusion of the police official with the opposite party is not so uncommon in the present scenario. The 2005 amendment to the Cr P C which led to the insertion of Cr P C 176 1(A) is a glaring example which proved that in special cases inquest needs to be conducted by trained judicial officers as police cannot be expected nor trusted in many sensitive cases eg. Custodial death, custodial rape.[9] An extension of this will emphasize the importance of autopsy even in seemingly innocuous cases which come before the autopsy surgeon on a daily basis. It has been established in many autopsies done worldwide that the post mortem examination which appeared to be a mere necessity at first proved to be a game changer by challenging the police version of manner of death and ultimately guiding the

police to an altogether different, hitherto unexplored course or line of investigation. The forensic experts involved in day to day medico legal practice would testify the role autopsy plays even in apparently natural death cases. Certain intoxications, both suicidal and homicidal, have come to the fore after autopsy. Police have registered FIRs in multitude of cases after important revelations in autopsy reports.

The medical opinion in the death investigation has a great corroborative value. The Indian courts treat medical opinion as expert opinion and with respect, as the doctor forms conclusions based on his or her medical knowledge. The legal requirements of conducting a post-mortem are implicit in section 174 CrPC. Thus there is no scope for doctors denying their legal responsibilities.[10]

Further, police inquest is considered the most common form of inquest in the Indian set up which has always been considered inferior to other forms of inquest prevalent worldwide esp. Medical examiner inquest. In such a scenario, are we willing to vest the power of waving off autopsies in the police. Such a move may backfire.

Further, the guidelines cite the absence of Forensic Science Laboratory or Virology laboratory ear marked for bio-safety level for examination of such contagious samples. Hence, it advisable that no tissue or

biological samples to be preserved in such cases.

Following practical difficulties may arise which emphasize the importance of viscera preservation:

Preservation of viscera for chemical examination may be useful to determine the manner of death in certain cases e.g, Hanging cases are generally regarded as suicidal but detection of high doses of sedatives or intoxicating drugs or poison may prove them to be homicidal, in drowning cases although regarded usually accidental high doses of poison in the stomach and blood may be proved as homicidal.

In cases of road traffic accidents or vehicular injury, though cause of death is due to injury, but presence of sedative, narcotic or alcohol in high doses may prove this a case of negligence on the part of victim also. Hence it is clear that chemical analysis may still have value even in cases where cause and manner of death has already been determined but doctor's discretion and decision making with regards to preservation of viscera for chemical, histopathological or biochemical analysis may have important medicolegal implications.

Further, viscera should be preserved in following cases:

- unknown or unidentified dead bodies

- Where cause and manner of death is unknown
- In all homicidal deaths
- Preferably in suicidal and vehicular accidental deaths.
- Deaths due to suspected criminal abortion

Above all in cases where police has made a request for preservation of viscera. Although, the doctor is not bound by the request made by police but still an imprudent choice of not preserving the viscera despite police requisition might stand counterproductive in a court of law.

Again, this protocol will hamper the investigation of deaths due to intoxication to a great extent and the doctor would be left with no objective referral or purview to give cause of death in such cases.

As per ICMR guidelines, If a COVID 19 confirmed/suspected case dies to any unnatural cause like poisoning, accident, burns, drowning etc., the certification of death and issuance of Medical Certificate of Cause of Death (MCCD) should be done in coordination with police personnel and the body should be handed to relatives without internal dissection. In treated cases, hospital case records like lab investigation reports, report of other diagnostic tests including imaging studies, treatment given etc. will give an additional documentary background for correlating with the

investigation and to reach a reasonable conclusion about the cause of death and other related queries. Non-invasive autopsy technique as described in guidelines should be used, if at all required to prevent the risk of spreading the infection to Mortuary Staff, Police personnel and contamination of Mortuary surfaces. If the autopsy surgeon feels that he will not be able to conclude cause of death or any other related issue without dissection, then he can proceed with minimal invasive / limited internal dissection. But MohFW guidelines diverge from this standpoint in the following way:-

- The Team should be well trained in infection prevention control practices.
- The number of forensic experts and support staff in the autopsy room should be limited.
- The Team should use full complement of Personal Protective Equipment (coveralls, head cover, shoe cover, N 95 mask, goggles / face shield).
- Round ended scissors should be used
- PM40 or any other heavy duty blades with blunted points to be used to reduce prick injuries
- Only one body cavity at a time should be dissected
- Unfixed organs must be held firm on the table and sliced with a sponge . care should be taken to protect the hand
- Negative pressure to be maintained in mortuary. 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.[11]
- An oscillator saw with suction extraction of the bone aerosol into a removable chamber should be used for sawing skull, otherwise a hand saw with a chain-mail glove may be used
- Needles should not be re-sheathed after fluid sampling . needles and syringes should be placed in a sharps bucket.
- Reduce aerosol generation during autopsy using appropriate techniques especially while handling lung tissue.
- After the procedure, body should be disinfected with 1% Sodium Hypochlorite and placed in a body bag, the exterior of which will again be decontaminated with 1% Sodium Hypochlorite solution.

The body, thereafter, can be handed over to the relatives. Autopsy table to be disinfected as per standard protocol.[12] The ICMR guidelines focus on non-invasive techniques like verbal & virtual autopsy including radiological means. The latter creates a technical problem, especially with regards to firearm deaths where retrieval of physical evidence in the form of bullets or pellets is very essential for the investigation. Further, virtual autopsy techniques are in itself insufficient if used alone without the aid of traditional autopsy as is corroborated by many studies.

Further, the ICMR guidelines divide the dead body management into further subdivisions viz. Packaging of Dead Body in Hospital ward/ICU/ Emergency Ward, Transport of Dead Body to Mortuary, Preservation in cold chamber and Precautions at Mortuary before handing over the body. It mentions under no

circumstances should the HCW working in the COVID ward/area carry the dead body to the mortuary or any other place. But practically, in India except the covid designated hospitals, other institutions and health care facilities are devoid of a designated covid and non covid area so adhering to this protocol is problematic.

The guidelines related to handing over of the dead bodies and cremation are by and large similar as far as various authorities are concerned. The Covid positive dead body has to be handed over to the district administration authorities and universal precautions have to be followed.

Categorization of Dead Body:

Based on the mode of transmission and the risk of infection of different diseases, the following categories of precautions for handling and disposal of dead bodies are advised: (Table 2)

Table 2: Categorization of Dead Body [13]

Cat. 1 :	Signified by a BLUE label Standard precautions are recommended for all dead bodies other than those with infectious diseases as listed under Categories 2 & 3.
Cat. 2 :	Signified by a YELLOW label In addition to standard precautions, additional precautions are recommended for dead bodies with known: (a) Human Immunodeficiency Virus infection (HIV) (b) Hepatitis C (c) Creutzfeldt-Jacob disease (CJD) without necropsy (d) Severe Acute Respiratory Syndrome (SARS)

	(e) Avian influenza (f) Middle East Respiratory Syndrome (MERS) (g) Coronavirus disease (COVID-19), and (h) Other infectious diseases as advised by the physician i/c, the infection control officer or microbiologist.
Cat. 3 :	Signified by a RED label In addition to standard precautions, stringent precautions are recommended for dead bodies with known: <ul style="list-style-type: none"> (a) Anthrax (b) Plague (c) Rabies (d) Viral haemorrhagic fevers (e) Creutzfeldt-Jacob disease (CJD) with necropsy, and (f) Other infectious diseases as advised by the physician i/c, the infection control officer or microbiologist.

Staff should put on appropriate personal protective equipment before handling the dead body: (Table 3)

Category 1: Gloves, water repellent gown and surgical mask. Use goggles or face shield to protect eyes, if there may be splashes.

Category 2: 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.

Category 3: cap/hood, face shield/goggles, N95 respirator, water resistant gown, long nitrile gloves/double nitrile gloves, full length shoe covers/ boots.

Table 3: Appropriate PPE

Procedure	Hand hygiene	Disposable gloves	Medical mask	Respirator (N-95 or similar)	Long sleeved gown	Face shield (prefer) or antifog goggles	Rubber gloves	Apron
Packing & transport of the	Yes	Yes			Yes			

body								
Mortuary care	Yes	Yes	Yes		Yes	Yes		
Autopsy	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Religious observation . care of body by family members	Yes	Yes			Yes or apron			Yes

Experience in GMCH, Chandigarh

In our institute, medicolegal autopsies are being carried out by following the Universal Precautions in all cases. In 'brought in dead cases', nasopharyngeal swabs are taken in the mortuary and RT PCR/ RAT test report is required before shifting the body to the autopsy table. The department has done postmortem examination even in several Covid positive bodies by taking proper precautions and donning the appropriate PPE. Separate donning and doffing areas have been designated for the purpose. Sterilization practices, as contained in MoHFW guidelines are adhered to while disinfecting the morgue. The department had framed its own Autopsy Protocol and Guidelines for management of dead bodies, including packing, transfer to the mortuary, conducting postmortem examination, final

packing and disposal, in these pandemic times.

The Chandigarh Administration has mandated that all covid positive bodies be disposed off in a particular manner. As soon as a positive body reaches the mortuary, the Chandigarh Red Cross representatives are informed, in addition to informing the concerned authorities. The Red Cross personnel, along with volunteers, in PPE, arrive at the mortuary, take consent from the relatives of the deceased regarding disposal and then pack the body on to the coffin. The body is then transported by hearse vans to the cremation ground and under the observation of the Health Authorities and 2 designated relatives of the deceased, the body is cremated in an electric crematorium. The van, after reaching the mortuary is then disinfected with 1 % hypochlorite solution. The cremation is done completely free of cost

As there is only one electric crematorium in Chandigarh, the previous timings of 9 AM to 5 PM were increased to 7 PM. Further, 2 cremations, extra, were allowed using the traditional method of Pyre, for which the charges were fixed at INR 3000/-.

During the peak times, we faced problems because of piling up of bodies, as the work force and infrastructure for cremation was limited. However, all the stake holders in the process, including the relatives of the deceased were quite understanding and cooperative and the department did not face any serious problems in disposing off the dead.

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