

Management of burying dead bodies of Covid-19 patients and During History's Worst Epidemics: Black Plague, Spanish Flu, Ebola

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Abstract

COVID-19 pandemic is caused by Coronavirus, called as SARS-CoV-2 causes respiratory diseases that range from common flu like disease to acute respiratory syndromes. The first case of Coronavirus was reported in Wuhan city, Hubei province in China in early December 2019.

After the declaration of Coronavirus Pandemics, many Countries declared the Lockdown to stop the spread of infection. Countries started Reporting hundreds and thousands of death and no guideline was there in the beginning for the management of infected dead bodies and funerals. Later the guidelines were made and issued by the Ministry of Health and Family Welfare in India for handling the infected dead bodies. It recommends leak-proof plastic body bags of 150 µm in thickness to be used with another layer of a bag and decontamination of both internal and external body bag. Embalming of the dead body is not allowed and autopsies should be avoided. However, if an autopsy is must, then strict infection prevention control practices with proper PPE is done. According to the Indian Council for Medical Research, cremation by electric or CNG (Compressed natural gas) is the preferred method for disposal.

Keywords: COVID-19 pandemic, dead body, PPE, Disinfection

Introduction

COVID-19 pandemic is caused by Coronavirus, called as SARS-CoV-2 initially. Coronaviruses mostly causes a respiratory disease that causes common flu like illness to lower respiratory tract infection leading to respiratory distress syndromes^[1]. The first case of Coronavirus was reported in Wuhan city, Hubei province in China in early December 2019. It was declared as Pandemics by WHO on 11 March 2020 as it spread globally and associated with lakhs of cases and thousands of death^[2,3]. Many papers on Coronavirus reported 80% of infected individuals having a mild influenza like illness (ILI), 14% having serious symptoms and 5% cases admitted with critical illness requiring intensive care. This Covid pandemic created significant challenges in health care facilities. It has reached almost all the nations in the world. More and more people are dying from it.

Protocol of burying dead bodies of Covid-19 Pandemics

The Ministry of Health and Family Welfare in India issued a detailed guidelines for the handling of infected dead bodies.^[4] For the management of Covid Positive Dead Body, certain criteria should be taken into account. Very important is that Hospital should maintain the dignity of the deceased, standard precaution (like hand hygiene, PPE) should be taken before handling. Step wise procedure to be followed during handling of dead body with environmental cleaning and disinfection of the deceased surroundings. Dead body to be transported to the mortuary with precautions.

Material and Methods

Preparation:

All items needed to be arranged like gauze piece/cotton for packing of orifices, tapes, small sprayer, dead body bags, biodegradable plastic sheet, BMW bins, 70% alcohol based hand-rub, bandage roll, scotch tape, Sticker for marking the identity of dead body, Sodium hypochlorite solution and covered trolley to transfer body. Checklist to be prepared before and made available at the time of packing of Dead Body.

SPECIAL INSTRUCTION to be given to health care workers handling dead body

1. All the healthcare workers (housekeeping, aya/ward boy, nurses and doctors) involved in the physical handling should show respect to the dead body on humanitarian ground.
2. Always wear an extra fluid resistant plastic gown and gloves over the PPE to avoid contamination from the body.
3. To check the presence of all required items in the setting for proper and timely management of dead body.

Trainer should be responsible for monitoring:

- Compliance of step wise disinfection protocol while handling of body.

- Cleaning and disinfection of the patient's surroundings.
- Timely transport of body to mortuary.
- Protecting themselves through proper PPE use during doffing, and donning

Certain practices to be done to make sure the safety before beginning the donning and doffing process.

- Team members should ensure their safety before and after attending to the patient.
- Team members should have the knowledge of the protocols for handling of dead body. They should not feel anxiety or fatigue.
- Anticipate any contamination of areas, surfaces or equipment. Set up of packing area to be checked. The trolley should be available for transferring of body to packing area. The proper signage to be posted.

Basics of Handling Dead Body

- COVID-19 infection transmission is through droplets therefore there is no increased risk of infection from dead body but all the steps of standard precaution to be followed while handling the dead body.^[5] These are :

1. Hand hygiene before and after interaction with dead body.
2. Donning an extra pair of gloves and plastic gown over the PPE (eye protection such as face shield or goggles, N-95 mask, haze mat suit and gloves)
3. Safe handling of sharps.
4. Disinfection of used instruments and device on the patient.
5. Cleaning and disinfection of environment of deceased.

- In order to transfer the body first of all removal of all catheters and other indwelling devices needed.
- Signage highlighting dead body packing area should be displayed.
- Placement of a covered trolley in the packing area, for smooth transfer of body from ICU area to packing area and then to the mortuary.
- Adequate supplies of disinfectant (e.g., hypochlorite solution 1000 ppm) and/or wipes for disinfection of PPE.

- Adequate supplies of Sanitizer for performing hand hygiene, as indicated after doffing steps.

- Hand hygiene performed before and after handling dead body. Appropriate PPE should be used to avoid contamination. Follow general safe-work practices including:

- Keep any movement or handling of the body to a minimum.
- Not disinfect the body before its transfer to the packing area.
- Contain any leakage of body fluids from orifices by putting tape.
- Change PPE when torn or heavily contaminated.

Methodology

Steps of packing deadbody

It is important to maintain the Privacy of the dead body so the screen stand should be placed around the bed of the deceased. It is recommended to check that the staff handling the dead body should be in proper PPE before performing wise procedure of packing dead body.

Embalming of the dead body is not allowed and autopsies should be avoided. However, if an autopsy is must, then strict infection prevention control practices with proper PPE is done.

Step 1

- Hand hygiene by alcohol hand rub is done before touching the dead body.

Step 2

- All the equipment support like the probes of monitor connected to ventilator, syringe pumps should be disconnected. Remove all tubes, drains and catheters (iv cannula and urinary catheters) on the dead body. Sharps like intravenous catheters should be handled cautiously and disposed into sharp containers.

Step 3

- All punctured holes or wounds of the dead body (resulting from removal of catheter, drains, tubes,) should be disinfected with 1% hypochlorite and closed with impermeable material.

Step 4

- All the waste gathered from the dead body to be discarded in designated bins as explained below.^[6]
- Yellow bin---Soiled cotton, Infective dressing material.
- Red bin---Plastic tubing, Catheters, Fluid bottles & IV sets.
- Blue bin---Broken sharps, Glass ampoules.

Step 5

- Shift the body to packing area via transfer trolley and then the soiled linen will be tied in double plastic yellow bag properly and discarded in yellow bins.^[7]

Step 6

- Plug all orifices like ear, nose, and mouth and disinfect with 1 % sodium hypochlorite and closed with tape.

Step 7

- Disinfect the whole body thoroughly starting from head to toe with 1% sodium hypochlorite solution, then position the body. (Tie both hands & toes, position the head and chin with the help of bandage roll).

Step 8

- Wrap the whole body with biodegradable plastic sheet and again disinfect all the area from head to toe with 1 % Sodium Hypochlorite.

Step 9

- Place the body into leak-proof biodegradable body bag and again disinfect the outer surface of the bag with 1% sodium hypochlorite.

Step 10

- Tagging is done by sticking the sticker on which the NAME, AGE, SEX, RELIGION, DIAGNOSIS, IDENTIFICATION MARK, of person is mentioned.

Step 11

- The body is then shifted to Mortuary via covered trolley. The mortuary should have cold storage compartments facility and disinfected after removal of the body. The cold chain to be discontinued, when not in use. It is been advised that the whole packing procedure including the shifting of dead body should be done within 30 mins of death.

Step 12

- After shifting of the dead body to mortuary the staff who attended packing will disinfect the environmental surfaces (bed railings bed mattress, side tables, IV stand) with 1 % sodium hypochlorite thoroughly. Floor is wet mopped with 1% sodium Hypochlorite. All the electronics is disinfected with 70% alcohol wipes (Ventilator monitor, Ventilator plug and power cord)^[8]

Step 13

- After completing the procedure of cleaning and disinfection of the deceased environment, the staff will doff.

Crematorium or burial guidelines

Government has worked on framing the guidelines for handling dead bodies as the disposal of dead bodies has to be proper for preventing further infection," Lav Agarwal, joint secretary, ministry of health and family welfare.

- According to this guidelines families will have to be present during cremation.
- To maintain social distancing, large gathering at the crematorium/burial ground is not allowed in order to prevent spread of the infections.
- The relatives may be allowed to see the deceased for one last time by unzipping the body bag using standard precautions including hand hygiene. Religious rituals can be performed but touching of the body is not allowed.
- The Indian Council for Medical Research considers the preferred method for disposal to be cremation by electric or CNG (Compressed natural gas)-run crematoria

History

Methods of burying dead bodies During History's Worst Epidemics (From the black death to the Spanish flu epidemic to last year's Ebola outbreak)

Black Plague, London, 1348-1350

The black plague started in 1348 and was estimated that approximately half of London's victims died in this 18-month epidemic. Infection could not be transmitted directly by contacts with dead bodies but may be via fleas and lice, so dead bodies should not be kept close to the living as was custom before onset of Plague that helped the disease to spread rapidly. It became very difficult to bury so many dead bodies inside existing burial grounds. William Maitland's in his book called History of London mentioned that due to shortage of space, the property called "No-Man's Land" was bought by Bishop of London to bury the victims of the plague. But that was not sufficient so a local landowner purchased a 13-acre property for burying dead bodies. History revealed that the bodies were stacked five deep in these graves. [9]



<https://images.theconversation.com/files/55661/original/tqz59cc3-1407135581.jpg?ixlib=rb-1.1.0&q=45&auto=format&w=926&fit=clip>

Figure- 1 Spanish flu

Spanish Flu, United States, 1918-1919

Spanish flu epidemic of 1918 affected nearly one-fifth of the world's population and 30 to 50 million died globally and no of deaths in the United States only were 675,000. Coffin supplies were exhausted due to rapid and large number of deaths during the Spanish flu pandemic, existing burial grounds was not sufficient. Corpses were kept at home as very difficult to find coffin, and a prepared grave. Bodies crowded the city morgue; Corpses were covered in ice and shoved into bedroom corners where they festered for days. Inundated undertakers stacked caskets in funeral home hallways and even in their living quarters.[10]

At the peak of Pandemic, Philadelphia reported 1000 deaths per day. Nearly 500 bodies were piled up in City morgue which had a capacity for 36 bodies only. Six supplementary morgues were opened and bodies were kept in cold storage plants. Horse-drawn wagons were constantly collecting corpses from porches and sidewalks, which were wrapped in sackcloth's and blood-stained sheets. Funerals customs and gatherings were banned in cities including Philadelphia and Chicago. No one was allowed to open the caskets except parents or wives for the identification of soldiers before burying, that too when they covered their mouths and noses with masks.



<https://mk0globalbiodefhl316.kinstacdn.com/wp-content/uploads/2020/10/smithfield-cemetery-black-plague-archeological-genomics-y-pestis-transmission-dynamics-medieval-epi.jpg>

Figure- 2 Black Death

Ebola, West Africa, 2014-present

CDC, reported approximately 10,000 death due to the West Africa Ebola epidemic. Ebola is highly contagious disease transmitting by direct contact of person's death. Public of West Africa followed the burial custom; they touched the dead bodies by washing and kissing, thus significantly increasing the transmission of disease. WHO estimated that about 20 percent of Ebola infections spread by burying the dead bodies of Ebola patients due to such custom? Thus WHO declared protocol of "management of dead bodies." In this protocol health care workers wearing Coverall gown, would remove bodies for burial or cremation. The standard burial practices were not followed so not well accepted by communities.

Same year in October the Protocol was modified by WHO and other societies including International Federation of Red Cross, religious Priests, and medical authorities. The modified protocol was "safe and dignified burials." burial should be done by teams of about 10 members who are trained to safely bury the body but with respecting family sensitivities." [11,12]

In this protocol, upon arrival at the house, the burial team supervisor had to go to the house of dead person, introducing the whole team to the family. Then they discussed with community leader or counselor and the family about the importance of safe medical burial. First expressing condolences for the family's loss, then counsel the family about the special steps taken for burial in order to protect the family. Safe and dignified burials were conducted by trained staff, the team should maintain the dignity of the deceased, standard precaution (like hand hygiene, PPE) should be taken before handling the dead body. Then cleaning and disinfection of the patient's surroundings was done by spraying the area with 1% chlorine solution. Then the body was placed in body bag, which was disinfected with chlorine again. At last it was placed in another body bag.



The work of the burial teams is thought to have played a major role in reducing the impact of the Ebola virus <https://naisa.es/blog/wp-content/uploads/2014/10/epi.jpg>

Figure- 3 Ebola

Conclusions

In the beginning there was no Protocol for the management of infected dead bodies and funerals. History revealed that the bodies were stacked five deep in graves. In Ebola Pandemic the WHO together with the International Federation of Red Cross (IFRC) modified the protocol for burying dead Ebola victims that was "safe and dignified burials." Red Cross teams Carried out more than 50% of all burials during the outbreak and did safe and dignified burials.

It is recommended to check that the staff handling the dead body should be in proper PPE before performing step wise procedure of packing dead body. The Ministry of Health and Family Welfare in India issued detailed guidelines for the handling of infected dead bodies. Hand hygiene should be performed before and after handling dead body with appropriate PPE and environmental cleaning and disinfection of the deceased surroundings to avoid contamination.

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