

DEAD BODIES DISPOSAL AND RECORD MANAGEMENT GUIDELINES AND PROCEDURES DURING COVID-19 PANDEMIC IN MALAYSIA: A CONCEPTUAL STUDY

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Abstract

The outbreak of coronavirus disease that emerged in December 2019 (known as the COVID-19 pandemic) has caused distress to many countries worldwide. Malaysia is one of the developing countries that is dealing with and monitoring the transmission of the disease in the same stressful climate. One of the most critical issue during this pandemic is the proper way to handle and manage bodies of COVID-19 victims so as to reduce the risk of spreading the virus from the dead to the living. Since the government is unfamiliar with handling a potentially lethal pandemic, it has taken steps to study and obtain information from China, the region where the virus originated. Data were also collected from other countries. On top of that, other policies and guidelines relating to the management of dangerous diseases were also referred to better manage the pandemic situation in Malaysia. This study looked into the current guidelines and procedures in managing the disposal of dead bodies and its record management for COVID-19 victims in Malaysia. It also looked into recommendations provided by other international agencies. It is hope that this study could be useful for the better management of COVID-19 related deaths and its data records.

Keywords: *Dead bodies, Record Management, Guidelines, Covid-19, Malaysia*

1.0 Introduction

According to one's beliefs, the burial ground and cremation are two methods of treating and disposing the death of human bodies. The management of body disposal in Malaysia is heavily influenced by an individual's religions. Burial grounds are mainly used by Muslims and Christians followers while others, such as Buddhists and Hindus, favour cremation. A funeral is a ceremony that remembers, honours and sanctifies the dead. There are several ways to commemorate the legacy of the deceased and such rituals may include prayers, religious readings, burning of the body, mummification, or even bone picking. Cremation, on the other hand, is a process in which the human body is burned to ashes. The process is defined as the combustion, vaporization and oxidation of dead bodies to basic chemical compounds, such as gases, ashes and mineral fragments retaining the appearance of dry bone. Regardless which method of body disposal that may be used, it is crucial during a pandemic to have a proper management of the death process, such as documentation and appropriate disposition, including temporary burials to ensure traceability and correct management of bodies.

In light of the worsening situation in Malaysia, where the COVID-19 pandemic outbreak has resulted in over 700 deaths as of January 2021, methods of disposing the dead have to be better managed in order to control the spread of the virus. The Malaysia Ministry of Health has taken extra precaution by developing guidelines to stop the chain of the virus from spreading. One of it is to take control of the disposal of COVID-19 victims [1]. The refusal to allow family members observe or even conduct funeral rites has sparked some opposition, but with proper documentation and records, it is hoped that even during this unprecedented time it would provide some sort of closure and help family members remember the deceased.

There have been instances abroad where COVID-19 remains have not been properly managed in accordance with the country's health agency's standard operating procedures (SOPs), resulting in coffin being opened when brought home and body kissed by family members [2]. This has caused the whole family being infected and spreading the virus further within the community. It is therefore important to adhere to a set of guidelines to control the spread of the virus. Health history and numbers of deaths related to diseases are well recorded in Malaysia. However, there is a lack of focus on disposal of bodies during a pandemic, especially when it comes to mass burial or cremation of the victims. Therefore, this paper will be concentrating on guidelines and procedures currently being adopted and practiced in Malaysia for the disposal of COVID-19 virus related deaths.

2.0 Death Records Management on Covid-19 Cases in Malaysia

Death records management has been practiced for many centuries. It has been confined to the entering of information or details in registers and books and may even contained hand-drawn maps and plans. These one-of-a-kind records served as subjective evidence of a person's death. The ability to trace records and locations of the burial ground and cremation also made it easier for family and friends to search for and locate the deceased's final resting place. Nowadays, the administration and management of death records has become more efficient thanks to technological advancement.

When death occurs in a government-registered hospital in Malaysia, the medical practitioner concerned will certify the cause of death and the hospital is then required to register the death within twenty-four hours. The hospital will thereafter issue the National Registration Department (NRD) Death Registration Form and a burial permit. The NRD is required to issue a death certificate within twenty-four hours of the death being reported, in which the death certificate will normally state the cause of death. An extract copy of death certificate may be obtained from any NRD office upon payment of a fee. The local funeral director may arrange to obtain the extract of the Malaysian Death Certificate on behalf of the next of kin. Once the local funeral director has obtained the extract copy of death certificate and burial permit, the arrangement of burial or cremation will be proceeding.

On the other hand, if a person dies of natural causes but was not hospitalised at the time of death, a police report must be made. The next of kin must provide the police with all relevant records and documentation. The police may request a post-mortem to determine the actual cause of death after which the pathologist will forward the completed report with the cause of death to the police and the police will decide if any further action is required. If no further action is required, the investigating police officer will register the death and issue the burial permit. Once the funeral director has obtained clearance from the police, he will then proceed with the arrangement for burial or cremation in accordance with the instructions of the next of kin.

COVID-19 cases were first reported and detected in Malaysia early January 2020 involving three (3) Chinese nationals who had a close contact with an infected individual back in Singapore [3]. This quickly snowballed into 5,251 COVID-19 cases with 86 deaths by April 2020 as reported by the Ministry of Health (MOH) in Malaysia [4], [5]. By early January 2021, Malaysia recorded 16 deaths per day due to COVID-19 [6]. Digital data has aided in daily monitoring of COVID-19 related deaths throughout Malaysia whereby the announcement of death does not mention the victims' names to protect their privacy.

The development of policies and regulations that include necessary administrative and standardised technical procedures is important to ensure the privacy of deceased data for the benefit of family members. The implementation of policies and procedures would also assist in ensuring the dignity of the dead stays protected through their proper disposition, either through cremation or other means of disposal, that are in accordance with their cultural and religious beliefs. It will further facilitate subsequent identification efforts and the traceability of bodies, especially if a mass burial is required due to a surge in deaths.

3.0 Death Investigation, Post-Mortem and Disposal Procedures in Malaysia During Covid-19 Pandemic

Following high COVID-19 death tolls from around the world, Malaysian government began to draft and issue guidelines on the proper handling of bodies of deceased persons with confirmed COVID-19 infection. Among the guidelines referred and adopted were from the WHO and Centres for Disease Control and Prevention (CDC) from the United States. All dead bodies from the COVID-19 are potentially infectious, therefore a standard death investigation, post-mortem and disposal procedure should be implemented for every case. The COVID-19 virus in a dead body may be transmitted when persons handling the dead body are in contact with blood, body fluids or tissues from the infected dead body. In order to reduce the risk of transmission, these dead bodies should be handled in such manner that exposure to blood, body fluids and tissues is minimised.

This is achievable by educating and training medical and front-liner workers, promoting safe working environment and adopting high standard work safety practices, using government recommended safety devices or tools as well as taking part in vaccination process. For documentation and recording purpose, there is a need to practice the confidentiality of a patient's medical record and history after his/her death. Only closed relatives can view the record and history. Furthermore, personnel must also be informed of the possibility of exposure to contamination as result of contact with infected bodies. This is to ensure that appropriate steps may be taken to prevent further spread of the infection. The use of label such as "Danger of Infection" on the dead body is considered useful. The guidelines are also there to make it possible for deceased's family to receive funeral care and services as well. Hospitals, public mortuaries, funeral workers, and staffs are required to adopt COVID-19 guidelines in light of current pandemic situation. All personnel involved should be well informed of the necessary precautions steps to be taken to further reduce the spread of the virus.

It is commendable that the Ministry of Health Malaysia has acted promptly by adopting public health measures and interventions from the early stage of the outbreak despite limited data

from Wuhan at that point of time. However, due to the contagious nature of COVID-19 it was inevitable that it soon began to spread worldwide, starting with countries in the Southeast Asia region, including Malaysia. The spread of COVID-19 has resulted in many organisations and institutions around the world issuing guidelines relating to the safe handling of bodies of deceased persons with suspected or confirmed COVID-19 infection including World Health Organisation's interim guidance on the infection prevention and control for the safe management of a dead body in the context of COVID-19 [7]; Royal College of Pathologist (RCPATH)'s guidance on post-mortem examinations for mortuary workers in suspected COVID-19 [8]; guidelines by the European Centre for Disease Prevention and Control [9]; and International Committee of the Red Cross (ICRC)'s technical recommendations for healthcare and death care workers.

In response to the outbreak, the National Institute of Forensic Medicine (IPFN) Malaysia has also published an interim guideline for the management of the dead for all suspected or confirmed COVID-19 cases in Malaysia [10]. It provides guidelines on the transportation of bodies from Emergency Departments or wards to the mortuary, post-mortem examination, handling of the body including religious/ritual body preparation and its disposal.

In Malaysia, the Royal Malaysia Police is the leading agency in a death inquiry as they are bound by law under section 329 of the Criminal Procedure Code (CPC) to investigate all sudden death reports including homicide, suicide, and accidental deaths [11]. Section 330 and 331 of the CPC further require the police to arrange for a post-mortem examination to be carried out once sudden death is reported, and a Government Medical Officer including a forensic pathologist will then conduct a post-mortem examination of the body.

With the current pandemic situation especially considering the highly contagious COVID-19 and the uncertainty behind the cause of death of a person, the responsibility to arrange for post-mortem examination, including the disposal of a suspected or confirmed COVID-19 case currently lies on authorized officers appointed under the Prevention and Control of Infection Diseases Act 1988 [12], namely the Public Health Officers. This is especially so when death is reported outside of hospital. After being notified of a suspected or confirmed COVID-19 death, a Public Health Officer will be present to supervise and guide the police officers at the scene on the proper way to attend to the deceased body and its transportation to the mortuary. The area and the hearse will then be decontaminated by the Public Health Officer. Post-mortem examination including sample collection during the pandemic also have to adhere to strict protocols and precautions as stated in the guideline provided by the National Institute of Forensic Medicine Malaysia [10].

Public Health Officer will then proceed to supervise the preparation of the body and its release to next of kin where they are prohibited from performing the usual religious or ritual practices including opening the sealed coffin and touching the body. Only funeral prayer for the non-Muslims and dry purification for the Muslims can be performed under the watchful eyes of health authorities. The body is then taken for burial or cremation directly from the mortuary, if possible, within the same day of the post-mortem examination.

4.0 Management of Large-Scale Death During Covid-19 Pandemic

The declaration of COVID-19 as a pandemic by the World Health Organisation (WHO) on 11 March 2020 [13] indicated a possibility of large-scale death happening which will result in enormous pressure on local service providers with responsibilities relating to the management of the dead. A contingency plan is therefore needed to overcome this possibility. In response to the WHO's declaration of COVID-19 as a pandemic, one of the measures used by the Malaysian government to contain outbreak was to implement Movement Control Order throughout Malaysia starting from 18 March 2020. A special session of the Malaysia National Security Council (MNSC), chaired by the Malaysian Prime Minister was convened daily to monitor the COVID-19 situation and the public was updated from time to time.

The Movement Control Order is enforced pursuant to the Prevention and Control of Infectious Diseases Act 1988 [12] and the Police Act 1967 [14]. Under the Prevention and Control of Infectious Diseases Act 1988, the Minister of Health has on 17 March 2020 issued the Prevention and Control of Infectious Diseases (Declaration of Infected Local Areas) Order 2020 [15] declaring all States and Federal Territories of Malaysia as infected areas of COVID-19. With this declaration, the Minister of Health may now issue regulations pursuant to section 11 (2) of the Prevention and Control of Infectious Diseases Act 1988.

In the event of a large-scale death in Malaysia, death management will then fall under the scope of the Malaysia National Security Council (MNSC)'s Directive 20 [16]. When and if the situation in Malaysia transitioned into a mitigation phase, whereby the containment of the virus in the community has failed and the increase of death rates has gone beyond the capacity of local service providers, this Directive No. 20 will be activated by the National Disaster Management Agency (NADMA) [17].

According to Roosli and O'Keefe (2011) [18], the MNSC Directive 20 is basically a standard operational procedure (SOP) for all departments involved in disaster management in which its policy framework was developed from international and national requirements such as Hyogo Framework of Action (HFA), Yokohama Strategy (guidelines for natural disaster prevention, preparedness and mitigation); Habitat Agenda (a practical roadmap for an urbanising world, setting out approaches and strategies towards the achievement of sustainable development of the world's urban areas), other International Strategy for Disaster Reduction (ISDR) strategies (a system of partnerships for disaster risk reduction strategies which consist of international, regional and national agencies) and national rules and regulations. It is therefore a government issued directive that includes policy and mechanisms to provide direction in relation to national natural disaster, including outbreak of diseases, and its relief management.

As stipulated in the MNSC Directive 20, in the event of a large-scale death, the emergency management capability will comprise the first responders, namely the Royal Malaysia Police (RMP), the Malaysia Armed Forces (ATM) and the Malaysia Civil Defence Forces (APM). The NADMA will oversee the whole operation and the coordination of all these first responders' agencies as well as the distribution of any financial assistance, equipment, transportation, or personal protective equipment (PPE). They will also manage any temporary field mortuaries, manpower, cold body storage, religious burials, or cremations. As soon as mortuaries become overloaded with infectious remains, post-mortem examination will cease for all COVID-19 related deaths. However, it is still a requirement to perform post-mortem examinations for homicides and suspicious deaths as the management of the dead during a pandemic should not impede medico legal investigation of the death where required by the authorities and legislation, provided that additional health and safety precautions be adopted throughout the post-mortem procedures.

5.0 Covid-19 Centralized Body Facility and Disposal (Temporary Controlled Burial)

To prepare for large scale death due to COVID-19, COVID-19 centralized body facility will be identified by NADMA and will be situated at various suitable locations. These facilities will function as a temporary mortuary centre for all COVID-19 deaths. It is basically a holding area for all suspected or confirmed COVID-19 deaths in which its security will be maintained by the RMP, ATM or APM. It will also be equipped with cold body storage containers where bodies will be properly tagged, documented, and stored. To determine the suitability of such facility, it should be big enough to accommodate thousands of bodies as well as be able to function as an administration centre, rest area and provide sufficient accommodation for first responders who would be working around the clock.

For unknown bodies, buccal swabs will be taken for DNA profiling to keep as a record for future identification before the body is subjected to religious body preparation and last rites done by trained personnel in full PPE.

Temporary controlled burial is a method for a long-term temporary storage of unidentified bodies where underground temperature is lower than at the surface and thus provides for natural refrigeration [19]. This is done by performing a burial procedure where each body will be clearly marked with GPS coordinates, to facilitate future exhumation for the purpose of identification by next of kin. This method was used as a practical solution when one hundred and sixty-three unidentified bodies, presumed to be victims of a human trafficking ring, was exhumed by the authorities from clandestine graves along the Malaysia-Thai border [20]. Thus, in the event of large-scale death due to COVID-19, temporary controlled burial might provide a fundamental solution for unidentified bodies to be treated with dignity and respect as well as an opportunity for them to be identified in the future.

In the context of a pandemic, mass graves are not recommended. Not only they are not in line with international best practices, but they are also often the result of poor planning and show disregard for the wishes and cultural and religious beliefs of next of kin as well as the whole community at large. As much as individual graves facilitate a more accurate traceability of bodies, trench burials might also be necessary during a pandemic [21, 22]. A trench will be able to hold a single level of properly labelled bodies, each placed parallel to the other. If it is properly documented and managed, and if the justification for this type of burial method is communicated to the next of kin and communities affected, it might provide a solution for disposal of bodies in the event of large-scale death due to COVID-19.

6.0 Covid-19 Death Management Standards

The International Committee of the Red Cross (ICRC) is an impartial, neutral, and independent organization established in 1863 whose exclusively humanitarian mission is to protect the lives and dignity of victims of war and other situations of violence as well as to assist in the response to humanitarian emergencies, such as epidemics. The ICRC acquired forensic capacity in the early 2000 to support its humanitarian operations around the world, including for ensuring the proper and dignified management, documentation, and identification of the dead [23].

Governments and other related stakeholders have appealed to ICRC for recommendations on the management of the dead from COVID-19 infection, for which it has prepared the required guidelines, based on its forensic capability and expertise obtained worldwide from the management of the dead during crises, including epidemics (e.g., Ebola [23]). The guidelines also provided for the safe disposition or handover of remains to family members. This is further explained below:

- a) Decisions on the final disposal of bodies and human remains infected with COVID-19 will vary according to local, cultural, and religious context, for which there may be a need to consult with relevant stakeholders, particularly religious representatives, to ensure that changes to standard practice are acceptable. This will ease the burden of the family members as well as not jeopardising one's beliefs.
- b) If final disposal is to take place off-site, human remains should be placed in a second outer body bag. (If the human remains have already been double bagged, the outer bag should be removed and replaced with a new outer bag). This outer bag should be thoroughly disinfected prior to release from the site. Guideline must be followed to ensure the safety of everyone involved and to minimise the spread of the virus.
- c) Cremation of unidentified human remains should be avoided, and burial in single graves is the preferred method of disposal. Bodies should be buried in their respective body bags,

regardless of the use of coffins. This will help in their future recovery and examination if necessary (e.g., identification) as well as taking care of the disposal of the body bags.

- d) Personal belongings of the deceased infected with COVID-19 may present a cross contamination hazard. ICRC recommends disinfects all items before handing over to the next of kin as failure to do so will lead the spread of the virus through survivor's belongings.

7.0 Covid-19 Death Burial Ground Management

With more and more nations around the world implementing unprecedented steps such as movement control order in efforts to contain the exponential spread of the virus, yet death due to this virus is still unavoidable. This consequence develops a panic situation [24]. It is a resource-intensive and difficult task, however, there is no easy way to compromise this pandemic. No matter what the cost and the amount of time it may take to develop one, the value of it is greater than any, especially now given the COVID-19 outbreak.

Similarly, the health system in a country should provide continuous servicing by strengthening the health strategy. Due to the current COVID-19 pandemic, it has changed the ways in managing the dead body due to victim caused by the virus. COVID-19 had made the management of burying the dead body becoming more demanding in ensuring the high standard operating procedures (SOP) are continuously flow and making people's life more meaningful.

The deadly pandemic has reached almost all the nations in the world. There are more people die in every minutes. In some countries, even the army has been called upon to help dispose of the dead as there is a shortage of coffins, and undertakers are overwhelmed. It is essential to have measures in place to contain the spread of infection while handling dead bodies. In view of this, different guidelines and protocols have been proposed bearing in mind the limited information we have about the virus at present.

The following is steps for those who are involved in transporting the body of someone who died from the Covid-19 pandemic:

1. In the case of the body needs to be relocate, those who are involve must wear disposable gloves. The body then is contained in a body bag. This body bag must not allow any body fluids to leak from the enclosure. Scientifically, the virus that causes COVID-19 is not thought to be carried by blood (bloodborne), but leaked fluids could cause exposure to pathogens [25].
2. The practice of disinfecting the outside of the bag with chemical disinfectant. In addition, following the health authority's instructions for cleaning and disinfection products including concentration, application method, and contact time but not be compromised.
3. Following transport of the body, remove gloves. Then immediately wash hands for 20 to 30 seconds. A hand sanitizer that contains high percentage of alcohol is much better for washing hands.
4. The health authority has developed a standard operating procedure if family members want to see the body of the deceased. In this case, they are required to wear protective equipment such as gloves, goggle, face mask and special protective clothes. The body is a vector for the virus and it must not be touched in any conditions.
5. The health authority has directed doctors to inform family members once the COVID-19 patient death. The medical personnel need to transport the body in a special bag.

6. In the case of the family members to the deceased are in the quarantine stage due to the possible COVID-19 infection, they need to deliver identification card or birth certificate in order for the hospital can issue the death certificate.
7. During the movement control order, all funeral ceremony needs to be avoided. In addition to that, family member needs to inform authority if any of the family members dies in home so that preventive measures can be implemented.
8. Funeral services are to be avoided, while, on family members' request, the mourning could be done with a closed casket as long as the services do not last longer than four hours with no more than 10 attendees, and sanitary measures maintained.
9. People who are unwell should not participate in the viewing or funeral. If not possible, people who are unwell, should wear a medical mask, maintain at least 1m distance from others and perform frequent hand hygiene to avoid infecting others. In areas of community transmission, anyone attending the funeral should consider wearing a mask in accordance with local guidance.
10. Those tasked with placing the body in the grave, on the funeral pyre, etc. should wear gloves and perform hand hygiene once the burial is complete.
11. If a national citizen happens to die overseas in a foreign country, the procedures should be carried out through Malaysia high commissioners, consulates and embassies.
12. Graveyards in the country have long been advised to expand their physical capacity to withhold the surge of bodies.
13. Graveyards and funeral homes in the country have long been advised to expand their physical capacity to withhold the surge of bodies.
14. In some western countries, there have been activities to develop a public pit to manage the dead body due to the COVID-19 pandemic [26].
15. For non-identified corpses, the protocol dictates that a medical examination must be recorded to differentiate the cause of death, saying: "It is forbidden the incineration of non-identified bodies or identified bodies that haven't been claimed of those who have died or are suspected of having died by COVID-19."
16. Medical staff should be equipped with knowledge and skills to:
 - a. Prevent any leakage of body fluids from the dead body;
 - b. Keep as minimum as possible in physically handling the dead body;
 - c. Disinfect the dead body before its transfer to the burial place;
 - d. Wrap the dead body in cloth, not body plastic bags, when there is excessive fluid leakage; and
 - e. manage multiple dead body at one time – if there are large numbers of dead bodies encountered.

In the case the dead body needs an autopsy, the safety procedures are consistent with those that apply to the autopsies of people who have died of an acute respiratory illness or other infectious diseases [27]. The lungs and other organs of the person died of COVID-19 may still have live virus. Therefore, if this dead body is needed to undergo autopsy, the health authority must ensure that safety measures are in place to protect those performing the autopsy. This includes to apply appropriate PPE must be available, including a scrub suit, a long-sleeved fluid-resistant gown, gloves (either two pairs or one pair of autopsy gloves), a medical mask, eye protection (face shield or goggles), and

boots/footwear protection. Performing autopsies must be in an adequately ventilated room, i.e. for natural ventilated spaces, a controlled airflow. Table 1 shows the equipment in handling COVID-19 dead bodies.

TABLE 1
Equipment in handling COVID-19 dead bodies

| Equipment | Details |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hand hygiene | <ul style="list-style-type: none"> • Alcohol-based hand rub • Running water • Soap • Disposable towel for hand drying (paper or tissue) |
| Personal protective equipment | <ul style="list-style-type: none"> • Gloves (single use, heavy duty gloves) • Boots • Waterproof plastic apron • Isolation gown • Anti-fog goggles • Face shield • Medical mask • N95 or similar level respirator (for aerosol-generating procedures only) |
| Waste management and environmental cleaning | <ul style="list-style-type: none"> • Disposal bag for bio-hazardous waste • Soap and water, or detergent • Disinfectant for surfaces – hypochlorite solution 0.1% (1000 ppm), 70% ethanol, or hospital-grade disinfectant. |

(Source: World Health Organization, 2020 [27])

WHO recommendations pertaining to handle the dead body should be minimal and the remains should not be sprayed, washed or embalmed [27]. A high standard of personal hygiene should be adopted along with the use of Personal Protective Equipment (PPE).

In the case of COVID-19, the type of PPE must be able to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Personal protective equipment may include items such as gloves, safety glasses and shoes, earplugs or muffs, hard hats, respirators, or coveralls, vests and full body suits.

All staff should be trained in the prevention of infections to avoid direct contact with body or body fluids. Hand hygiene could be achieved by washing hands with liquid soap and water or proper use of alcohol-based hand rub. WHO recommends wearing a full set of PPE together with heavy-duty rubber gloves and, in cases of accidental exposure, washing of the exposed area with copious amount of water.

8.0 Conclusions

Despite limited resources during this unprecedented time, Malaysia has successfully adopted and implemented a well-rounded dead bodies disposal and record management. Guidelines or standard operating procedures (SOP) have been drafted almost as soon as the outbreak went out of control in China. In regards, the government and Ministry of Health’s effort in preparing specific procedures for the handling of the remains of COVID-19 patients to curb the spread of this pandemic is highly commendable.

Differences in managing the dead bodies also suits the cultural and religion diversity that are being practiced in Malaysia. For instance, Muslims corpse handling procedures were thoroughly discussed between Ministry of Health's forensic experts and Jabatan Kemajuan Islam Malaysia (JAKIM). The results from this discussion assisted Ministry of Health in setting the procedures to best manage the dead for Muslims COVID-19 victims, especially when family members are not allowed to manage the remains at home or elsewhere and it had to be managed entirely by trained medical staffs.

As for non-Muslim victims if there is a ritual ceremony that needed to be performed, the ritual should be kept as minimally as possible and performed on the outermost layer of the body bag. Corpses should then be immediately cremated or buried according to their respective religions. The final homage ceremony is also based on standard operating procedures (SOP) with physical distancing, mask wearing and frequent hand sanitising and washing under the supervision from officials of the Ministry of Health Malaysia.

As for identification purposes, only one family member is allowed to identify the corpse from a distance of 1 meter and that person is required to wear personal protective equipment (PPE) and is not allowed to kiss or touch the corpse at any time. Remains of all COVID-19 victims is wrapped with a piece of white linen and two (2) layers of mortuary bags. The outermost layer of the body bag will be sanitized with 0.5% sodium hypochlorite as guideline provided by World Health Organisation (WHO).

Meanwhile, death records due to COVID-19 in Malaysia is managed fully by the Ministry of Health (MOH) to prevent the spread of fake data and to protect the privacy of the deceased. In addition, Malaysian Personal Data Protection Commissioner has imposed laws under the Protection Act 2010 (PDPA) to protect personal data during Covid-19 pandemic which includes data of victims such as basic identity and information of close contacts, movement records and many more. However, more stringent and additional safeguard is needed to better protect sensitive data from being used by irresponsible individuals.

9.0 References

- [1] The Star (2020). Covid-19 funerals a very painful affair for loved ones <https://www.thestar.com.my/news/nation/2020/03/24/covid-19-funerals-a-very-painful-affair-for-loved-ones>.
- [2] News Straits Times (2020). Covid-19: Indonesia battles wave of 'body snatching' by grieving relatives. <https://www.nst.com.my/world/world/2020/06/600085/covid-19-indonesia-battles-wave-body-snatching-grieving-relatives>.
- [3] First coronavirus cases in Malaysia: 3 Chinese nationals confirmed infected, quarantined in Sungai Buloh Hospital [Internet]. Borneopost. 2020 Jan 25; Available from: <https://www.theborneopost.com/2020/01/25/first-coronavirus-cases-in-malaysia-3-chinese-nationals-confirmed-infected-quarantined-in-sungai-buloh-hospital/>.
- [4] New Straits Times [Internet]. [Breaking] 3 coronavirus cases confirmed in Johor Baru. New Straits Times. 2020 Jan 25; Available from: <https://www.nst.com.my/news/nation/2020/01/559563/breaking-3-coronavirus-cases-confirmed-johor-baru>.
- [5] Covid-19 (Maklumat Terkini). Ministry of Health (Malaysia) [Internet]. 2020 Available from: <http://www.moh.gov.my/index.php/pages/view/2019-ncov-wuhan>.
- [6] The Straits Times [Internet]. Malaysia logs record 16 Covid-19 deaths in one day, patients in intensive care also hit new high. The Straits Times. 2021 Jan 8; Available from <https://www.straitstimes.com/asia/se-asia/malaysia-logs-record-16-covid-19-deaths-in-one-day-patients-in-intensive-care-also-hit>.
- [7] World Health Organization. Interim guidance: Infection Prevention and Control for the safe management of a dead in the context of COVID-19. 2020. <https://apps.who.int/iris/handle/10665/331538>.

- [8] Hanley B, Lucas SB, Youd E, Swift B, Osborn M. Autopsy in suspected COVID-19 cases. *J Clin Pathol* 2020;0:1–4.
- [9] European Centre for Disease Prevention and Control. Considerations related to the safe handling of bodies of deceased persons with suspected or confirmed COVID-19.
- [10] Interim Guidelines for handling dead bodies of suspected/probable/confirmed 2019 Novel Coronavirus (2019-nCov) Death. Available from: <https://www.legeforeningen.no/contentassets/0b2ab607837444ad94a3f18737143872/malaysia-handling-dead-bodies-of-suspected-probable-or-confirmed-covid-19-death.pdf>. Accessed 29 January 2021.
- [11] Act 593. Criminal Procedure Code (CPC). Laws of Malaysia. 2012.
- [12] Act 342. Prevention and Control of Infection Diseases Act 1988. Laws of Malaysia 2016.
- [13] WHO Director General’s opening remarks at the media briefing on COVID-19. 2020. <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>
- [14] Act 344. Police Act 1967. Laws of Malaysia. 2012.
- [15] P.U.(A) 87/2020. Prevention and Control of Infectious Diseases (Declaration of Infected Local Areas) Order 2020. 17 March 2020.
- [16] Malaysia National Security Council (MNSC). Directive 20. 2012. https://www.adrc.asia/management/MYS/Directives_National_Security_Council.html.
- [17] Khoo, L. S., Hasmi, A. H., Ibrahim, M. A., & Mahmood, M. S. (2020). Management of the dead during COVID-19 outbreak in Malaysia. *Forensic Science, Medicine and Pathology*, 16, 463-470.
- [18] Roosli, R., & O’keefe, P. (2011). An evaluation of barriers in implementing disaster planning and the housing programme in Malaysia. *Risk Management*, 13(4), 209-227.
- [19] Management of dead bodies after disaster: A field manual for first responders. 2nd ed. Washington D.C.: International Committee of the Red Cross; 2016.
- [20] Mohd Noor MS, Khoo LS, Alias WZZ, Hasmi AH, Ibrahim MA, Mahmood MS. The clandestine multiple graves in Malaysia: the first mass identification operation of human skeletal remains. *Forensic Sci Int*. 2017;278:410 e1–9.
- [21] Finegan O, Fonseca S, Guyomarc’h P, Morcillo Mendez MD, Rodriguez Gonzalez J, Tidball-Binz M, et al. International Committee of the Red Cross (ICRC): General guidance for the management of the dead related to COVID-19. *Forensic Sci Int*. 2020;2:129–37.
- [22] Finegan, Oran et al., 2020. International Committee of the Red Cross (ICRC): Cemetery planning, preparation and management during COVID-19: A quick guide to proper documentation and disposition of the dead. *Forensic science international*, 316, p.110436.
- [23] Cordner, S., & Tidball-Binz, M. (2017). Humanitarian forensic action—Its origins and future. *Forensic science international*, 279, 65-71.
- [24] Entress, R.M., Tyler, J. & Sadiq, A. (2020). Managing mass fatalities during COVID-19: Lessons for promoting community resilience during global pandemics. *Public Administration Review*, 80(5), 856-861.
- [25] Lin, Q., Zhao, S., Gao, D., Lou, Y., Yang, S., Musa, S.S., Wang, M.H., Cai, Y., Wang, W., Yang, L. & He, D. (2020). A conceptual model for the outbreak of Coronavirus disease 2019 (COVID-19) in Wuhan, China with individual reaction and governmental action. *International Journal of Infectious Diseases*. doi:10.1016/j.ijid.2020.02.058.
- [26] Mick, P. & Murphy, R. (2020). Aerosol-generating otolaryngology procedures and the need for enhanced PPE during the COVID-19 pandemic: a literature review. *Journal of Otolaryngology – Head & Neck Surgery*, 49(1), 2020. Accessed 29 Jan. 2021.
- [27] World Health Organization (2020). Infection prevention and control for the safe management of a dead body in the context of COVID-19. Interim guidance 4 September 2020.