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## An Analysis of Guidelines in Conducting Post-Mortem During the Pandemic of Covid-19 in Malaysia

Ramalinggam Rajamanickam<sup>1</sup>, Paveethra Manian<sup>2</sup>, Insyirah Mohamad Noh<sup>3</sup>, Nur Khalidah Dahlan<sup>4</sup>, Mohd Zamre Mohd Zahir\*<sup>5</sup>Nadhilah A. Kadir<sup>6</sup>

### Abstract

*The essential cause of severe respiratory tract infections in humans is the development of the coronavirus, or COVID-19, which is harming people worldwide and raising concerns about global health. Coronavirus was first found and identified in December 2019, causing countries across the world, including Malaysia, to increase emergency measures to combat the virus. 2nd January 2020 was the known first case of COVID-19 reported in Malaysia. As part of the humanitarian forensic action approach, it is crucial to develop a plan for the management of the dead for all suspected or confirmed COVID-19 cases, including the unidentified deceased, as the pandemic does not discriminate against its victims. Every nation needs to be prepared to manage the high capacity of deaths that could be caused by the pandemic. Due to this virus, the globe is experiencing a severe and acute public health emergency. There is no common set of laws or standards for dealing with and handling the deceased during the outbreak, in part because legal requirements and fatality rates vary by country.*

**Keywords:** COVID-19, post-mortem, guidelines, Malaysia

### 1. Introduction

COVID-19 has now spread to nearly every country on the planet, and several deaths are reported daily. COVID-19 is known to be an acute respiratory illness affecting the respiratory system and the lungs. Even though lockdowns have been announced in several countries to curb the spread of this deadly virus, the management of infected dead bodies still remains a source of concern where the daily death tolls are high in number. Generally, deaths caused by COVID-19 are considered to be natural deaths and do not require a post-mortem examination. However, this is an exception to cases caused by other factors such as custodial deaths, accidents, homicide and suicide. As a result, the decision on whether an autopsy is required is made by the respective jurisdictional authority in charge, which may include coroners, judges, or prosecutors, and may also include discussions with investigators and forensic medical doctors. In contrast, the sampling method used to confirm the cause of death in a COVID-19 suspected case, if an autopsy is not necessary, is comparable to the method used to diagnose COVID-19 in suspected patient cases.

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<sup>1</sup> Faculty of Law, Universiti Kebangsaan Malaysia (UKM), Malaysia, Author Email: [rama@ukm.edu.my](mailto:rama@ukm.edu.my)

<sup>2</sup> Faculty of Law, Universiti Kebangsaan Malaysia (UKM), Malaysia, Author Email: [mpaveethra@gmail.com](mailto:mpaveethra@gmail.com)

<sup>3</sup> Faculty of Law, Universiti Kebangsaan Malaysia (UKM), Malaysia, Author Email: [insyirahmohdnoh@gmail.com](mailto:insyirahmohdnoh@gmail.com)

<sup>4</sup> Faculty of Law, Universiti Kebangsaan Malaysia (UKM), Malaysia, Author Email: [nurkhalidahdahlan@ukm.edu.my](mailto:nurkhalidahdahlan@ukm.edu.my)

<sup>5</sup> Faculty of Law, Universiti Kebangsaan Malaysia (UKM), Malaysia\*Corresponding Author Email: [zamre@ukm.edu.my](mailto:zamre@ukm.edu.my)

<sup>6</sup> Faculty of Law, Universiti Kebangsaan Malaysia (UKM), Malaysia, Author Email: [nadhilah@ukm.edu.my](mailto:nadhilah@ukm.edu.my)

The recent death of a medical examiner in Thailand as a result of coronavirus disease (COVID-19) has proven that everyone is at risk of getting infected especially pathologists as they are directly involved in the operation of the autopsy at all times. The concern about the deaths during COVID-19 has led to the development of Guidelines for Handling Dead Bodies of Suspected/Probable/Confirmed COVID-19 deaths Management No.4/2020 by the Ministry of Health (MoH) of Malaysia to regulate the autopsy during the pandemic. However, these Guidelines are not comprehensive and have shortcomings although they may be seen as a helpful guide to all parties involved. Therefore, this article is aimed at analysing the existing guidelines provided by the MoH, Malaysia and suggesting an improvement to the guidelines.

## **2. Research Methodology**

This article adopts a qualitative methodology. This article integrates two disciplines i.e. forensic science, particularly forensic pathology and the law. The main focus of this article is on the aspect of the law about conducting post-mortem (autopsy) during the spread of infectious diseases in Malaysia, mainly COVID-19. This article adopts a critical legal analysis approach by examining the existing law on the subject. The method of content analysis and critical analysis was adopted for analysis of data collected for this article (Ramalinggam Rajamanickam et al., 2015; Ahmad Azam Mohd Shariff et al., 2019; Ramalinggam Rajamanickam et al., 2019). Data was collected mainly from primary sources such as statutes and guidelines from Malaysia and other jurisdictions. The collection of data is so significant (Ramalinggam Rajamanickam et al., 2019) for the research and this reviewing process (Nurul Hidayat Ab Rahman et al., 2023; Nurul Hidayat Ab Rahman et al., 2022; Mohd Zamre Mohd Zahir et al., 2022).

## **3. Definitions of Infectious Diseases and Autopsy**

Post-mortem examination is one of the components of forensic medicine that is conducted by trained government medical officers. Post-mortem (also known as an autopsy) can be done via external and internal examinations to identify the cause of death and characteristics or any changes showed by a disease, chemical, radiation, accident, injury and others (Wan Mohamad Zamri et al., 2020). An autopsy is not performed routinely unless the death occurred due to a suspicious condition or trauma (British High Commission, 2013). A post-mortem is generally divided into two, namely the clinical autopsy and the medico-legal autopsy (Jabatan Kemajuan Islam Malaysia, 2015). Both types of autopsy have their own set of procedures (Saravanakumar a/l Maniam, 2019). An autopsy has its own value in determining the cause of death, detecting unknown wounds clinically and providing accurate information for death certifications (Wilson, 2006). Therefore, it can be said that autopsy is an important process in identifying the cause of death of a person.

Infectious diseases are diseases that can be spread through the medium of air, food, water or contact with body fluids that contain disease agents known as pathogen (Singer, 2015). Measles, yellow fever, plague and Ebola are among infectious diseases that have been listed in the Prevention and Control of Infectious Diseases Act 1998 (Act 342). Coronavirus 2019 or known as COVID-19 is one of the latest viruses that can cause respiratory infections and death. The transmission of this virus is through the respiratory droplets of coughing, sneezing or touch (World Health Organization, 2020). As of August 2021, a total of 207 million COVID-19 cases have been recorded worldwide while Malaysia reported a total of 1.38 million cases with 12,228 total deaths (Kementerian Kesihatan Malaysia, 2021).

The post-mortem issue became heated when death occurred due to COVID-19. In the context of infectious diseases, a large number of infections are unable to be detected before death but it can be detected through post-mortem examination (Michael L. Wilson, 2006). In China, forensic experts have taken the initiative to examine the bodies of COVID-19 cases to save patients. The discovery helps in framing the latest guidelines for the diagnosis and treatment of infectious diseases issued by the National Health Commission in China (The Star, 2020). In this regard, many jurisdictions in the world, including Malaysia are developing laws in the form of acts, guidelines and many more to provide guidance in the issues arising in connection with post-mortem during COVID-19.

Hence, it is important to examine the enacted laws especially guidelines to measure comprehensiveness in regulating the spread of COVID-19 as well as in curbing any side effects that will impact Malaysians in terms of health, social, economic and politics.

#### **4. Guidelines in the Handling of Autopsy During the Spread of Covid-19**

On 24 March 2020, the World Health Organization (WHO) has released an interim guide entitled Infection Prevention and Control for the safe management of a dead body in the context of COVID-19. This temporary guideline is developed for all parties including the healthcare and mortuary facilities managers, religious and public health authorities, as well as family members who are inclined to deal with the bodies of suspected or confirmed COVID-19. This guide states that safety measures and procedures should be taken in handling suspected or confirmed bodies of COVID-19 (World Health Organization, 2020). A range of guidelines have been proposed for conducting post-mortem examinations during the COVID-19 pandemic. These guidelines emphasize the need for safety precautions to protect pathologists and other personnel involved in the autopsy process (D'Aleo 2020; Sultan 2022).

On March 9, 2020, the Washington State Department of Health released a document called Infection Prevention for Funeral Homes Handling Deceased Cases of COVID-19. This document is to provide guidance for infection prevention in mortuary and funeral home workers managing people who died due to COVID-19, a disease caused by SARS-coronavirus-2 (SARS-CoV-2) (Washington State Department of Health, 2020).

Meanwhile, the Post-Mortem Exams and COVID-19 Guidance issued by the North Dakota Department of Health provides specific guidelines for the collection and delivery of autopsy specimens from deceased persons who are being investigated for COVID-19. This document also provides recommendations for biosafety practices and infection control during the handling and collection of specimens. The guide can be practiced by medical examiners, coroners, pathologists and other employees involved in autopsy (North Dakota Department of Health, 2020).

In Ireland, a guideline known as the Recommendations Relating to Post-Mortem Examination Practice during the COVID-19 Pandemic was issued by the Faculty of Pathology at the Royal College of Physicians of Ireland (RCPI) in 2013. The guideline states that the existence of precautions, the use of appropriate protective clothing and adherence to health and safety regulations are the key elements in the prevention of infection from the deceased persons (Health Protection Surveillance Centre of Ireland, 2013). Based on this statement, it is clear that precautions should be taken in handling corpses with COVID-19. Such measures include developing clear and complete guidelines that should be followed when an autopsy is conducted. Specific recommendations have been made for the collection and storage of biological samples, as well as for the handling of deceased individuals (D'Aleo 2020).

As early as 2018, the Health and Safety Executive, United Kingdom issued a guide entitled *Managing infection risks when handling the deceased: Guidance for the mortuary, post-mortem room and funeral premises, and during exhumation* to provide guidance for managing infection risks when handling deceased. This guide is aimed at those who work in mortuary and autopsy including pathologists, and those who are involved in exhumation and burial services (The Stationery Office of United Kingdom, 2018). The guide released in 2018 is comprehensive even though it was issued earlier than the existence of COVID-19.

Matters relating to coroners in the United Kingdom are regulated by the Coroners and Justice Act 2009. As the COVID-19 pandemic has widely affected the country, the government took steps to enact the Coronavirus Act 2020. In addition to this act, the United Kingdom government also developed *The Chief Coroner Guidance (26th March 2020)-COVID-19* which sets out judicial guidance for coroners in dealing with cases involving the death of COVID-19 (The Chief Coroner Guidance, 2020). These guidelines also provide a solution for excessive deaths due to COVID-19 where there may be situations that do not need to be reported to the coroner. The guidelines stipulate that there will be no physical hearing unless urgent and important and all hearings may take place remotely. The trial must be conducted in public and may not be conducted from the coroner's home or office. The guide also mentions the role of coroners and medical staff, especially pathologists involved with autopsy. The coroner should ensure that he or she does not request a lengthy report and take appropriate steps when the officer is called as a clinical witness. However, such guidelines do not clearly exist in Malaysia. Article 17 of the Guide relates to COVID-19-certified cases. The guide refers to the Ministry of Justice Guidance 2019 on the Notification of Deaths Regulations.

Hence, a Medical Certificate of Cause of Death (MCCD) can be issued if COVID-19 is the direct cause of death or the underlying cause of death. Article 19 clearly states that COVID-19 can be classified as a naturally occurring disease. Hence, it can also be a natural cause of death. This suggests that COVID-19 cases that do not require referral to a coroner can be addressed through MCCD. On the other hand, if there are additional factors related to the death and the cause of death is not clear, the matter will be referred to the coroner. However, the report notes that such situations may become more complicated when deaths occur in a community as medical staff may not have the ability to diagnose the disease and produce MCCD reports. Therefore, the matter could not be reported to the coroner.

A brief guide has been developed by The Royal College of Pathologists, United Kingdom following the spread of the COVID-19 infection epidemic in China for morgue staff who are potentially exposed to substances, including body fluids from the deceased in the morgue. This guide is designed to assist morgue staff and pathologists in deciding whether post-mortem examination is appropriate for COVID-19 deaths and to advise them on the possible risks associated with the case and how to mitigate those risks. This guide also covers the diagnosis of COVID-19 during post-mortem examination. Generally, if death is believed to be due to confirmed COVID-19 infection, it may not be necessary to perform a post-mortem examination and the MCCD should be removed (Michael Osborn et al., 2020). However, such guidance does not explicitly exist in Malaysia.

The procedures of medico-legal autopsy for the purpose of criminal investigation in Malaysia is governed by the Criminal Procedure Code (CPC) (Act 593). However, the Act only confers the powers upon police officers and medical staff to conduct a general post-mortem. The details on the conduct of post-mortem especially during the outbreak of infectious diseases such as COVID-19 in Malaysia is not explained in the Act.

Infectious diseases in Malaysia are regulated by the Prevention and Control of Infectious Diseases Act 1988. However, it only provides for the prevention and control of infectious diseases such as COVID-19 in Malaysia. This act does not directly touch on the aspects of autopsy (Khoo L.S. et al., 2020). In 2012, the Ministry of Health of Malaysia (MOH) has developed the Standard Operating Procedures of Forensic Medicine Services to standardize and improve the quality of forensic services in Malaysia (Kementerian Kesihatan Malaysia, 2012). This SOP contains seven parts in total. Although this SOP looks quite comprehensive, it does not mention any aspect relating to the operation of post-mortem during the transmission of infectious diseases in Malaysia.

Nevertheless, MOH has taken the initiative to issue a guideline known as Guidelines for Handling Dead Bodies of Suspected/Probable/Confirmed COVID-19 when Malaysia was hit by the outbreak of COVID-19. However, the guideline is not comprehensive as there are certain aspects that are not provided or explained in the guideline. Moreover, the guideline is not in line with the Guidelines for Handling Dead Bodies of Suspected/Probable/Confirmed COVID-19 Deaths Management No.4/2020 which was issued by the National Institute of Forensic Medicine (NIFM).

Forensic medical services at MOH are led by NIFM based at Kuala Lumpur Hospital. These institutions, which are divided according to regions throughout Malaysia including Sabah and Sarawak, play a role in providing the services of forensic pathology, forensic clinical and forensic science (Khairul Adli b. Nikman, 2019). The question is, why are there differences in the Guidelines issued by the MOH and NIFM in Malaysia? This situation does not occur in the United Kingdom in which The Coroners Guidance adheres to the suggestions provided in the guideline issued by the Royal College of Pathologists (Chief-Coroner-Guidance-No.-34-COVID-19, 2020) as they are the experts in the practice of post-mortem.

## **5. Analysis of the Guidelines for the Handling of Autopsies During the Spread of Covid-19 in Malaysia**

Every person has the right to be healthy and to control what they wish to do with their bodies, in general (Zahir, M.Z.M et al., 2019a; Zahir, M.Z.M et al., 2019b). Problems with one's health are a serious matter (Rahman, N.H.A., et al., 2023). Every person has the right to health care and medical attention (Zahir, M.Z.M, et al., 2021). A society's response to health issues is also crucial (Zainudin, T.N.A.T., et al., 2021). Consequently, it is critical to safeguard people's health and the matters relating to handling dead bodies. On 26 February 2020, the latest version of the Guidelines for Handling Dead Bodies of Suspected/Probable/Confirmed COVID-19 Deaths Management No.4/2020 was published by the National Institute of Forensic Medicine. However, on 24 March 2020, the Ministry of Health Malaysia (MOH) issued Guidelines for Handling Dead Bodies of Suspected/Probable/Confirmed COVID-19 that only cover three categories.

The existence of two guidelines related to the conduct of post-mortem during COVID-19 in Malaysia has been the root of all problems. The first guideline was issued by the National Institute of Forensic Medicine (NIFM) on 26 February 2020 while another guideline was issued by the Ministry of Health of Malaysia (MoH) on 24 March 2020. Although in principle, MoH seems to follow the guidelines issued by NIFM, differences still emerged between these two guidelines. For example, the NIFM Guidelines have four (4) specific guidelines, namely A, B, C and D. Meanwhile, the MOH Guidelines have only three (3) guidelines, namely, A, B and C.

The Guidelines for Post-Mortem Examination of Cases Due to Suspected/Probable COVID-19 Infection is nowhere to be found in the MoH Guidelines unlike the guideline issued by NIFM. Why does this difference occur? What is the rationale behind this difference? Of course, the NIFM has its own reasons for developing the four guidelines. Likewise, the MoH must have its own rationale for limiting the guidelines to A, B and C only. In other jurisdictions, the ministries and governments will be referring to the guidelines developed by the experts, for instance, The Royal College of Pathologists, United Kingdom. However, this does not seem to be the case in Malaysia as the guideline issued by the NIFM is not fully followed by the MOH. Instead, it was amended by the MoH. This will surely cause a conflict between the government and medical practitioners in terms of which guideline needs to be followed.

Furthermore, in Guideline A which was issued by the NIFM, Article 10 provides that COVID-19 corpses do not require autopsy. Even so, the possibility for the deceased to have died due to potential contribution by other factors should be taken into account. Unfortunately, Guideline A does not describe the steps that should be taken when such a situation occurs. As stated in section 328 of the Criminal Procedure Code (Act 593), “the court must determine through examination or post-mortem together with all available evidence to form an opinion as to whether it was the cause of death or accelerated the death of the deceased by an unlawful act or omission of some other person.” (Ganga Gowri a/p Raja Sundram v Pendakwa Raya, 2012). Moreover, the deceased may have had COVID-19 contacts prior to his or her death and may also have died as a result of suicide, or killed by an animal, machinery, or accident, or killed by another person, suddenly death.

There is uncertainty in the Guidelines issued by NIFM pertaining to such cases. This matter is also not included in the guidelines issued by the MoH. Not only that, the MoH Guidelines do not state anything on this matter (Ramalinggam Rajamanickam, Nur Insyirah binti Mohamad Noh, Nur Khalidah Dahlan, 2021). Thus, what is the post-mortem position for corpses that were confirmed to have been infected by COVID-19? The absence of clear guidelines will make it difficult for medical practitioners, especially pathologists to perform autopsies.

Guideline B applies to bodies that are suspected or have the possibility of being infected with COVID-19. Article 4 of the Guidelines issued by the NIFM states that the body will undergo a post-mortem which will be performed at the hospital. Therefore, the body cannot be taken to other medical institutions for an autopsy. There is also a situation where the hospital may not have the facilities for the autopsy to be conducted. In such cases, these guidelines do not specify the possible solution or steps that should be taken.

Another problem that arises is concerning Guideline C which only exists in the NIFM Guidelines. Although these guidelines do not exist in the guideline that was issued by MoH, the said issue still needs to be given attention as it was enrooted by the question of whether or not the issue was overlooked by MoH when ignoring the C Guideline that was developed by NIFM. Guideline C in the NIFM Guideline explains the procedure for forensic cases that have tested negative for COVID-19. For such cases, a post-mortem will be performed as usual. However, keep in mind that when the COVID-19 test is negative, it does not mean that the deceased was not infected with COVID-19. There is a possibility that a negative COVID-19 case can turn out to be positive. This happens as the infection is still in the early stages (window period) and cannot be determined accurately during the test (Jessica Watson G.P et. al, 2020).

It is mentioned in Guideline C that if the deceased is suspected or has the probability of being infected with COVID-19, an autopsy should be carried out in the hospital. A division between

DID (death in the department) case scenarios and BID (brought in dead) cases has clearly been enunciated in Guideline C. Article 2 explains that the situation of DID case can be considered as a clinical autopsy as it requires permission from the deceased's next of kin (relatives or family members) before any post-mortem can be performed. Article 3 further states that permission is not required in BID cases as they were referred via the Requesting Post-Mortem Examination on Body Form (Form Police 61). Article 8 until Article 16 of the C Guideline establishes the procedures that must be followed by a medical officer during and after the post-mortem examination is carried out.

Article 3 and Article 6 of Guideline C clearly stated that any autopsy that was carried out under the order of Police Form 61 shall be performed by a pathologist. The articles also explained that three to four trained forensic pathologists or histopathologists, medical officers, forensic medical assistants and forensic attendants must be present during the autopsy. In accordance with section 331(1) of the Criminal Procedure Code (CPC), a medical officer will be authorized to conduct the autopsy and must affirm the report of the cause of death. Nevertheless, this guideline does not mention the presence of police officers during the post-mortem examination as well as the power of a Magistrate under section 366 of the CPC.

Article 1 in Guideline A of the MoH and NIFM Guidelines only applies to the body that was sent from the emergency department or ward to the morgue. However, it should be noted that the suspicious possibilities of events may occur in such places, i.e. in the emergency department or ward (or before reaching such places) which may contribute to the death of the deceased even if the deceased has been contacted or is treated for COVID-19. Section 330 of the CPC allows a police officer who conducted an investigation under section 329 of the CPC to direct medical officers to perform an autopsy if sudden death or unnatural death, violence, or death which is accelerated by the unlawful act or omission occurs. Therefore, it can be expected that in such a situation, a police officer may use the power that was conferred by section 330 to direct medical officers to conduct an autopsy. This legal provision is not given attention by MoH and NIFM in the development of post-mortem guidelines during the outbreak of COVID-19.

Besides, the inclusion of Brought in Dead (BID) or Death in Department (DID) cases has not been specified in Guideline A. A Magistrate may make an order for an investigation of the cause of death to be conducted in a situation where the deceased dies while in detention, at a psychiatric hospital/mental health centre or in police custody. Guideline A only covers the case where the deceased was confirmed to have died due to COVID-19 and was taken from the emergency department or ward to the mortuary. Hence, it is not clear whether the initial place or location of the deceased before he was sent to the emergency department or ward is also included in Guideline A.

The measures that need to be adhered to by all parties after a post-mortem examination is carried out are specified in Guideline D which was issued by NIFM (which is akin to Guideline C of MoH). This guideline applies to cases where the deceased has died due to suspected/probable of being infected with COVID-19. In this situation, the bodies shall be disposed of either by burial or cremation as soon as practicable. In spite of that, there is no explanation provided for confirmed cases of COVID-19.

Occasionally, forensic pathologists will attend forensic cases which include accident cases, suicide, murder and so forth. These cases may be tested positive or negative for COVID-19. The question that arises is whether the definition of COVID-19 case given by the MOH in

Guidelines 2019 Novel Coronavirus (2019 nCoV) Management in Malaysia No. 2/2020 is comprehensive enough to cover all types of cases that are referred for autopsy as only cases that fall within the ambit of the definition of COVID-19 case will be tested. This implies that a test will not be performed on cases that do not suit the definition of COVID-19 case such as the case of solitary death at home and motor vehicle accident (MVA).

During the conduct of COVID-19 test, a swab should be taken using a special container that has a three-layer packaging. However, these containers are limited in number and cannot be obtained easily as they are controlled by the COVID-19 team that has been established in Malaysia.

For any forensic cases that were confirmed to have been infected with COVID-19, an autopsy should not be performed in any hospital except in hospitals that have a biosafety mortuary. In Malaysia, there are only a few hospitals that have biosafety morgue, such as Sultanah Bahiyah Hospital Alor Setar, Kedah and Queen Elizabeth Hospital, Kota Kinabalu, Sabah (Kementerian Kesihatan Malaysia, 2020). This signifies that an autopsy can be performed on the body at these hospitals only. To illustrate, a person was sent to the Hospital of the National University of Malaysia (UKM Hospital) for autopsy after being murdered. It was later found out that the body tested positive for COVID-19 after a test was performed on him. In this situation, the body will be sent to a hospital that has a suitable biosafety morgue as the UKM Hospital does not offer such facilities.

None of the guidelines has explained the use of virtual autopsy in post-mortem during the outbreak of infectious diseases in Malaysia such as COVID-19 albeit this method has been widely used in other jurisdictions. As known by many, virtual autopsy is a relevant method in limiting the risk of contracting viruses, especially during a pandemic (Li R et al., 2020). It is unfortunate for our country if this method is not adopted in performing autopsy.

In clinical autopsy cases, permission from the deceased's family members or next of kin must be obtained first. However, the question that must be minded is whether a clinical autopsy can be done without obtaining permission from the deceased's family member during the transmission of an infectious disease based on public interest or public health. An autopsy needs to be performed to find the best way to overcome the COVID-19 pandemic. Not only a post-mortem can provide useful input on the spread of the virus in the body, but it can also measure to what extent the medications given to the patient will indicate a response and other relevant conditions from him. Unfortunately, these issues have not been discussed in the Guidelines issued by either the MoH or NIFM.

A medico-legal autopsy will be conducted when there is a request from the police through Police Form 61. It is the police officer who has the power to call for a medico-legal autopsy to investigate a case. In conjunction with this, a medical officer or pathologist shall not perform an autopsy if there is no request from any police officers. However, neither the MoH nor NIFM guidelines state to what extent the guidelines issued have the power to decide whether there is a need for an autopsy or not in medico-legal cases.

Based on the above explanation, it can be concluded that there are shortcomings and ambiguities in the guidelines issued by the MoH and NIFM on the conduct of post-mortem during the transmission of COVID-19 in Malaysia. In the aspect of law and practice, the existing guidelines are not comprehensive in addressing all the issues that have been raised. All these issues need to be resolved so that medical practitioners can be protected from any legal and ethical liabilities as well as to ensure the smooth running of the autopsy process.



## 6. Conclusion

In conclusion, there are still a large number of uncertainties underlying the determinants of this pandemic and COVID-19 infection. There is no one-size-fits-all approach to treating and managing the deceased during the worldwide outbreak, owing to differences in legal requirements and fatality rates among countries. The ideal call usually involves critical strategies to respond to such situations and quick decision-making by higher authorities pertinent to the topic at hand. The concerning hike of COVID-19 daily cases in Malaysia calls for more organised and structured standard operating procedures. Although NIFM Malaysia has improvised its procedures and guidelines in managing the dead to achieve a balance between medico-legal requirements and the safety of the personnel handling the deceased suspected of confirmed COVID-19 cases, there is a gap that needs to be filled as the existing guidelines are inadequate and not straightforward in handling the deceased. The structure of the existing regulations in the management of the dead should be improvised to handle the increasing number of dead bodies during the COVID-19 pandemic.

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