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THE IMPACT OF HEALTHCARE REGULATIONS AND COMPLIANCE ON HEALTH ADMINISTRATION PRACTICES DURING COVID-19 PANDEMIC

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Abstract

Healthcare waste refers to the waste produced by healthcare institutions, medical labs, and biomedical research institutes. Inadequate handling of this trash presents significant hazards of disease transmission to garbage pickers, waste workers, healthcare professionals, patients, and the whole population due to potential contact with infectious pathogens. Inadequate waste management results in the release of hazardous and detrimental pollutants into the community. Nevertheless, the presence of highly infectious pathogens like the COVID-19 virus has caused significant disruption in the management and recycling of healthcare waste due to the large quantity of trash produced and its contagious properties. Multiple nations have implemented safety protocols to address this pollution and handle medical waste; yet, these procedures are inadequate and differ based on the specific circumstances of each country. Furthermore, the World Health Organization (WHO) has established explicit instructions for the handling and disposal of healthcare waste. These rules are assisting in the management of the highly transmissible healthcare waste generated by the ongoing epidemic. Effective healthcare waste management may contribute to mitigating the transmission of the COVID-19 virus and enhancing the potential for recycling materials, rather than disposing of them in landfills. Disinfecting and organizing healthcare waste promotes sustainable management and enables their usage for productive reasons. This paper examines the various tactics used by different nations for managing healthcare solid waste. It also addresses the obstacles encountered in this process and proposes potential solutions to overcome these issues. Additionally, it offers valuable perspectives on the management of hospital solid waste in the context of the COVID-19 epidemic and proposes a potential path for the future.

Keywords: Medical waste, Management of healthcare waste, COVID-19 pandemic, challenges, solutions.

1. Introduction

Healthcare waste is internationally recognized as the second most dangerous waste after radiation waste. The trash covers a range of different types, both dangerous and not dangerous, such as sharp objects, human body parts, blood, chemical waste, pharmaceutical waste, and medical gadgets (Rodriguez-Morales, 2013). The majority of this waste is generated by hospitals, primary care institutions, labs, mortuaries, autopsy centers, blood banks, nursing homes, and other medical establishments (Pepin et al., 2014). It is produced during the process of diagnosing, treating, immunizing people or animals, doing research, or manufacturing or testing biological substances. If not well managed, it may have severe consequences for human health (Johannessen et al., 2000). During an infectious disease epidemic, the amount of waste produced by healthcare institutions grows rapidly. Consequently, it is crucial for management to take extra precautions to prevent adverse consequences (Ramteke and Sahu, 2020).

The COVID-19 pandemic originated from the SARS-CoV-2 virus, which causes a respiratory illness. It was first identified in Wuhan, China in December 2019. The COVID-19 pandemic has been recognized as a Public Health Emergency of International Concern (PHEIC) by Wilder-Smith and Osman (2020), and the virus has now reached almost every country worldwide. The ongoing epidemic remains a substantial global public health menace. The exponential rise in the COVID-19 infection rate and the extremely contagious nature of the illness have resulted in a significant surge in hospital admissions. Therefore, the production of medical waste has seen a significant and quick growth. In addition, the rise in the quantity of personal protective equipment (PPE) used during the COVID-19 pandemic, as opposed to regular conditions, has also had a role in the growth of healthcare solid waste (Haji et al., 2020; Wei and Manyu, 2020; WHO, 2020b). Consequently, there is a need to enhance the capacity for managing healthcare waste (WHO, 2020b) due to the potential for the virus to spread if the trash is not properly handled.

Annually, a minimum of 5.2 million individuals, included 4 million children, succumb to illnesses caused by unregulated medical waste on a global scale (Star, 2020). Given the worldwide spread of COVID-19, the accumulation of large amounts of biological waste has emerged as a significant risk to both human health and the environment in the current epidemic. Garbage management staff, along with other front line workers such as physicians and nurses, must wear appropriate protective gear to prevent infection from exposure to garbage (ISWA-Jordan, 2020). The solid waste, such as sharps, personal protective equipment (PPE), and pathological waste, produced by patients who test positive for COVID-19 and the healthcare professionals attending to them, should be classified as infectious waste. To address the current situation, it is essential to implement suitable systems for collecting infectious waste. Trained personnel should use specialized containers, such as tagged, lined, and sharp-safe boxes.

Furthermore, it is crucial to disinfect the trash on-site before any transportation takes place (WHO, 2020b). Ilyas et al. (2020) and ISWA-Lebanon (2020) have reported that disinfecting trash and keeping it for nine days are effective approaches for reducing the risk of COVID-19 infection. The solid trash produced in the waiting rooms of healthcare institutions should be classified as non-hazardous waste. It should be stored in designated bags or containers, securely sealed, and appropriately disposed of by waste management personnel. Autoclaves and incinerators equipped with high temperature burners are alternative technologies that have been used to effectively handle healthcare solid waste in an environmentally friendly manner (WHO, 2020b). Amidst the epidemic, several nations have implemented distinct strategies to handle healthcare solid waste, although the World Health Organization (WHO) has developed specific standards to effectively manage it.

Regrettably, there is no comprehensive document that encompasses all the many management techniques for healthcare waste that various nations have used during the COVID-19 pandemic. This analysis examines the policies and methods of healthcare solid waste management in various countries, in accordance with the criteria provided by the World Health Organization (WHO). The study also endeavors to examine the difficulties in handling healthcare solid waste associated to COVID-19 in these nations. Furthermore, the research examines potential remedies for managing this waste in the rapidly changing circumstances of the COVID-19 epidemic.

2. Strategies for managing waste during the COVID-19 epidemic

A hospital waste management plan pertains to the systematic approach used by a facility to handle and dispose of the trash it generates. The content often covers the following aspects: (1) adherence to legislation; (2) duties of staff members; (3) categorization of healthcare waste; (4) precise protocols for managing healthcare waste; and (5) education and training of relevant personnel. Various nations have implemented diverse approaches to address the handling of the substantial and contagious volume of garbage generated during the COVID-19 epidemic.

To effectively address the pandemic, hospital waste management plans should include several supplementary measures to guarantee proper containment and prevent the spread of infection. Various nations have implemented optimal management strategies according to their capabilities, resources, and dedication (Singh et al., 2020b; Zand and Heir, 2020c). Various organizations have provided recommendations for effectively and sustainably managing healthcare waste while adhering to safety protocols (WHO, 2020a). As per the standards set by different member states of the European Union (EU), healthcare solid waste produced during the COVID-19 pandemic is classified as infectious waste, and there is a need to enhance the capacity to handle this garbage. If there are any concerns about incineration or disposal capacity, it is necessary to have appropriate facilities for interim waste storage. The garbage must be kept in hermetically sealed containers situated in secure zones accessible only to authorized people. To prevent potential transmission of the virus, it is advisable to apply disinfectant to both the

external and internal surfaces. It is essential for all personnel in the region to adhere to appropriate safety protocols (Cremonesi et al., 2020; Waste-Mangement, 2020.(

Amidst the COVID-19 outbreak in Hubei, China, healthcare solid waste that is contaminated with the virus has been separated and packaged by waste management personnel working in hospitals. The trash is disinfected using a 0.5% chlorine solution and then securely packaged in double bags before being stored temporarily in healthcare storage areas inside the hospitals. The disposal strategy for healthcare waste varies depending on the specific institution and its waste management infrastructure. Prior to disposal in a permitted landfill, sterilization by autoclaving or irradiation has been used for waste segments. Some hospitals have used on-site incineration or incinerated in a designated distant location to dispose of healthcare waste. Mobile incinerator or autoclave equipment have been deployed to handle the additional healthcare waste produced during the epidemic. Healthcare waste disposal has been explored as a potential use for cement kilns and other industrial furnaces. Excess healthcare waste has been temporarily held in specific sites that have been protected and segregated. Exclusive vehicles have been used only for the purpose of delivering healthcare solid waste, and meticulous records have been maintained. The loading spaces have been secured, sanitized, and isolated from drivers to minimize the risk of infection (ADB, 2020).

According to the rules of the CDC (Centers for Disease Control and Prevention), healthcare waste produced by COVID-19 patients in the United States of America (USA) is classified as equivalent to trash created by other patients. Therefore, the waste has been classified and managed as standard hospital waste, without the need for any further specialized treatment (Commendatore, 2020.(

The Philippines has implemented a specific amendment to address the management of healthcare waste during the COVID-19 outbreak. On the island of Luzon, there are designated carriers and facilities that are recognized and specialized in managing healthcare waste. These facilities are responsible for the treatment, storage, and disposal (TSD) of such waste. A specific permission is now in effect to gather pathological and infectious healthcare waste in order to facilitate its proper management. Every transporter who is officially registered must go through a designated checkpoint and submit the following documents online: an official letter of request, a certificate of registration for both the transporter and the transportation of hazardous waste, a plan for managing the transportation, a specified route for the transportation, a schedule, and an agreement between the healthcare waste generator, the transporter, and the treatment workers. Every vehicle used for the transportation of garbage is required to display certain marks, including the name and identification number of the transport, a placard, the waste class, and the waste number. These may be legible from a distance of 15 meters from the vehicle. The carrier who is officially registered must provide a report that demonstrates compliance and completion of the transportation. This report must be verified by a representative from the healthcare and TSD department (EMB, 2020).

3. Potential for techniques in managing solid waste in the healthcare sector

An effective healthcare waste management system in a healthcare facility necessitates evaluating the waste stream and current environmental practices, assessing waste management options, creating waste management plans, and establishing institutional policies and guidelines that clearly outline the duties and obligations of staff. For the sustainable management of healthcare waste, it is crucial to establish a waste management organization, allocate human and financial resources, execute programs, provide periodic training, monitor and evaluate progress, and continuously strive for improvement. Efficient waste management relies entirely on the implementation of appropriate healthcare waste management systems and methods. It is advisable to establish a waste management team or committee to create and execute a waste management strategy. Low-income communities should establish an infection control committee, with a designated individual overseeing healthcare waste management in healthcare institutions. Regularly reviewing the plan is crucial, and all healthcare waste professionals should have a thorough understanding of the procedures and any changes that occur at regular intervals (Bharsakade et al., 2021; Thakur, 2021). In general, optimizing healthcare resources may lead to a reduction in the creation of waste (Rodríguez-Pardo et al., 2020 .(

4. Conclusion

The quantity of healthcare waste is seeing a significant surge as a result of the elevated incidence of infection caused by the new COVID-19 virus. Workers in the waste management industry are at risk of infection from virus-contaminated healthcare waste owing to their direct exposure and inadequate safety measures. Consequently, the transmission of the virus may progressively escalate. The World Health Organization (WHO) has issued explicit instructions for the management of healthcare waste during the epidemic. Various countries have used diverse strategies to effectively handle healthcare waste. Implementing efficient safety protocols and effective operational strategies may facilitate the appropriate treatment of healthcare waste, hence preventing the transmission of the virus to individuals. Implementing waste disinfection, together with appropriate waste segregation and on-site waste treatment, may enhance healthcare waste management by promoting improved health and hygiene.

Mobile treatment and temporary storage solutions may be used to handle excess healthcare waste effectively, minimizing the risk of additional viral transmission and promoting sustainable waste management practices. Effective healthcare waste management may also facilitate the recycling or conversion of waste into useful items, such as electricity. Hence, implementing effective healthcare waste management practices may contribute to the economic growth of a country, promoting long-term and environmentally-friendly development. Furthermore, it will aid in mitigating the transmission of the COVID-19 virus.

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