Opinion

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Evaluation of the Quantities of Medical Waste Generated and the Factors Associated with the Generation at Medical Institutions in Taiwan

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Introduction

After the implementation of the National Health Insurance (NHI) system, hospitals have continually been improving the quality of medical treatment, and accepting more patients than before, thus resulting in an increased amount of workable hospital waste. Ho (2011) found that the amount of medical waste from disposable medical products has increased since the implementation of the NHI system. Among the hazardous waste types, the amount of infectious medical waste has increased at the fastest rate. In order for hospitals to handle such large amounts of medical wastes, they outsource registered waste treatment companies for transportation and disposal of wastes, which leads to a higher waste management cost for hospitals. According to medical statistics from the Ministry of Health and Welfare of Taiwan, the total wastes from regional hospitals reached 97,698 metric tons in 2011. A study was conducted to evaluate the quantities of medical waste generated and the factors associated with the generation rate at medical institutions in Taiwan. The total average quantity of infectious wastes generated was the highest in medical centers, or 3.8 times higher than that in regional hospitals. A Study found that the estimated quantity of medical waste from hospitals is about 22 tons/day and the average generation rate is 0.63 kg/bed/day. Recyclable materials are collected separately at a rate of 83%.

Sustainable Waste Management Model

Currently, waste management in hospitals is based on the waste disposal act. Although the management of biomedical waste disposal companies is effective, according to regulations, institutions that produce waste must be responsible for safe and proper waste disposal. Hence, when waste disposal management relies on outsourced companies and the waste is problematic, hospitals are still held responsible. Given this, hospitals should be extremely careful about the outsourcing risk of biomedical waste. Morrisey and Browne suggested that most of the municipal waste models identified in the literature are decision support models, which, for the purposes of this research, are divided into three categories those based on cost benefit analysis, those based on life cycle assessment and those based on multi-criteria decision making. Moreover, Morrisey and Browne suggest that even though a sustainable waste management model must consider environmental, economic and social aspects, no model so far has considered all three aspects in application. Most hospitals are concerned about economic factors, and biomedical waste disposal is based on market prices. Mere focus on price competition leads to the detriment of the social and environmental welfare. Therefore, hospitals must carefully evaluate risk-price tradeoffs in both short and long-run scenarios.

Factors Regarding Outsourced Biomedical Waste

Taiwan has imposed a very strict set of laws and regulations concerning the production, disposal and processing of medical wastes. However, medical institutions may violate these laws unknowingly. The penalties for violation are insignificant, but the violation may damage the medical institutions' reputation. This study proposes suggestions to the hospital administrators regarding the selection of outsourced biomedical waste disposal company, in order to guarantee proper disposal and quality of medical service. As the hospitals are the producers of wastes, they also need to strengthen the management and examination of wastes, in order to lower the risks after outsourcing. Medical wastes generally include controlled medical waste, bio-hazardous waste, isolation waste, biomedical waste, and potentially infectious waste. FMEA focuses on workflow processes and systems factor analysis, and investigate and illustrate a medical institution's risks related to biomedical waste outsourcing. These factors reflect the dangerous handling factors regarding outsourced biomedical waste, which should be concerned by hospitals when assessing and selecting the biomedical waste management company to effectively reduce their risks. Biomedical waste outsourcing and handling are one of the administrative tasks of hospitals.