INFECTIONOUS WASTE MANAGEMENT IN THE GOVERNMENT HOSPITALS BY PRIVATE TRANSPORT SECTOR: CASE STUDY OF HOSPITALS IN THE NORTH EAST OF THAILAND

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ABSTRACT

The hospital infectious waste tends to increase in both quantity and variety, due to a wide acceptance of single-use disposable items. This comes along with serious problems in the management of waste disposal and is of great concern due to potentially high risks for the human health and the environment. protect the environment local residents from waste disposal nuisances due to of high costs of running incinerators inside the hospitals, many of them had been shutdown continually. The increasing number of hospitals assigned other organizations from the private transport sector (PTS) to manage their waste disposal. Objective if this study is to identify problems and obstacles faced by PTS to manage infectious waste. Material and method uses a purposive sampling techniques 12 hospitals of the Ministry of Public Health (MoPH) in the northeast of Thailand were selected for the study including 3 central hospitals, 4 general hospitals and 5 community hospitals. All of them assigned PTS for managing their infectious waste disposal outside the hospital. A qualitative approach was used including observation, formal and informal conversation, focus group discussion and in-depth interviews. Medical doctors, nurses, staff responsible for infectious waste disposal, officials responsible for environmental aspects, head of PTS, and workers from PTS participated in the study. Results found that the practice of waste disposal did not follow planning and the policy stipulated for the management of waste disposal. Infectious waste was not separated from garbage while transported, vehicles used for transporting the waste were not of the required standard, know-how of workers were lacking and the need for using personal protection equipments were not recognized. The

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Infectious waste was stored and stocked in buildings of low standard without controlling the temperature inside. The collection of the waste did not follow the agreed schedule, and the waste was found ferment and released a strong smell. The know-how of the employees of the private companies was low. The awareness about the danger of infectious waste was lacking. The training program was inadequate. The infectious waste management of MoPH – hospitals that outsourced the disposal to be managed by PTS need to be improved and the system must be hold onto to a quality control in future.

**Key Words**: Infectious Waste Management, Private Transport Sector, Hospital, MoPH, Thailand

**INTRODUCTION**

Infectious waste management (IWM) remains primarily the most serious problem that has affected the social and medical realms of nearly every nation. Since 2002, there has been an increase in the level of public concern over the management of healthcare wastes on a worldwide basis.\(^1\) Healthcare activities lead to the production of wastes that may cause adverse health effects. Some types of healthcare wastes represent a higher risk to health than others. Approximately 15–25\% (by weight) of healthcare wastes are considered infectious. The World Health Organization (WHO) has estimated that, in 2000, injections with contaminated syringes caused 21 million hepatitis B infections,. 2 million hepatitis C virus infections and 260,000 HIV infections.\(^2\) The system of the IWM in Thailand is problematic since health care reformed in 1977.\(^1\) Governmental and public concern has subsequently arisen over the insufficient collection and treatment systems of IWM. Although, public hospitals have then own incinerators to handle their infectious waste (IW), Because of, the environmental concern and protests of local residents, many incinerators inside the hospitals have been shutdown lately. These hospitals eventually need service from outside waste management agencies. The huge quantity of IW generated was the huge quantity of IW disposed. Financial provision is necessary for capital invest rent and recurring expenditure. It is estimated that US$ 3,000-4,000 per tonnes of hospital waste in India are required. An estimate of € 1,000,000 spent per year at Sabadell hospital in Spain.\(^3\) While, the cost of IWM in Thailand is also high with an estimate of 10,000 to 17,000 Bahts per month.\(^4\)

Currently, an increasing number of hospitals which have other companies to manage the waste disposal. But until now, there still has been no control measure, especially the infection control of any part of the incineration by that company. Transportation of IW off the hospitals undertaken by PTS did not meet the regulatory requirements for safety. IWM does not face only technical problems, but it is also strongly influenced by the economic conditions such as separating, collecting and disposal expenditure, personal management such as training, education and government.
supportive policy. IWM in Thailand was managed by PTS since 2002. From 2004 to 2006, there was an increasing number of hospitals which had other organizations manage to the disposal. But until now there has been no control measure especially infection control of any part of the incineration by those organizations.

There are 281 hospitals in the northeast of Thailand under the permanent secretary office of the Ministry of Public Health, including 3 regional hospitals, 17 provincial hospitals, and 261 community hospitals. The problem of IWM were tends to increase, especially by the new trend of IWM by PTS. At present, there are no standard guide lines for PTS, hospitals and healthcare centers.

**METHODOLOGY**

The hospitals that employed the PTS were selected. The qualitative methods included participatory observation, non-participatory observation, in-depth interview, focus group discussions. Three PTSs and 12 hospitals that employed the PTS for transport IW in the northeast of Thailand. (including 3 central hospitals, 4 general hospitals, 5 community hospitals) were selected. Interview guideline was prepared. The target population was the former administrative of IW, and the present administrative of IW. The primary source of data was the hospitals and primary care units(PCU), which join the hospitals and PCU activities such as meeting, observation and interview on concerned IW source. The secondary data was form documentary search, research articles, and journal citation that appreciated in this study. The content and context analysis were used to analyze the data. The study commenced in may and ended in September 2007.

**RESULTS AND DISCUSSION**

**Planning and policy**: It was found that most of the hospitals have planning and policy but the practice was not regular and completed. There is lack of knowledge and awareness regarding IWM, for example waste collection and separation. If it was well organized, there would have been less amount of IW.

**Transportation**: Lack of route of transportation for IW separated from garbage. Lack of vehicle standard for IW transportation. Lack of knowledge and awareness and protection suits. There was lack of personal protection for the personals who handle waste.
IW storage: The structure and buildings were of low standard. There was no air-conditioned to control temperature to under 10\(^{\circ}\)C especially when there were some IW and the collection were not on time. The fermented waste and strong smell were found.

PTS employees: There were lack of knowledge and awareness especially the danger from handling of the infectious containers. There were also lack of protection suits.
IW manifests system: There is no standard manifest system in Thailand at present. The weight loss was the main example for IW disposal.

The policy of IWM in government hospitals is known to the head of each department. On the other hand the workers still doubt and are not clear duty regarding. The problems separatein, handling, collecting and storage. As a result hospitals have a huge IW. This study found that there were a lot of workers were of by the used needle and medical equipment. This study also found that some hospital have no policy about control and management IW. Lack of awareness, appropriate policy and laws are responsible for improper management of IW in hospital. The process of collection, segregation and disposal of IW is not performed according to recommended standards, and concerned people are exposed to the danger of such wastes. This study also found that a half of the doctors, nurses and infection control nurses (ICNs) did not knew that their hospitals had a written policy regarding the management of IW. This could be due to lack of information communication or in certain hospitals, and there was no written policy and announced IW. More ICNs knew responsible units for medical waste management than doctors and nurses. The PTS study found that workers, lacked knowledge and awareness especially about their personal hygiene and health. Some of them never wore protection suit and personal protection equipments (PPE) for example glasses, boot, mask and gloves. The study also found that nearly a half of Ward workers wore gloves and half of them wore aprons and masks. Segregation of waste by categories was done at the sources of the waste in 96.2%. cases Hand washing after taking off gloves was observed in 16.7% of the occasions. Ward workers are assigned to
handle hospital waste in their ward and to transport it to a storage site. Management of wastes usually is delegated to poorly educated laborers who perform most activities without proper guidance and insufficient protection. The IW is potentially harmful which can infect hospital patients, healthcare workers, general public and environment. In USA, 17,700 to 22,000 of nurses and healthcare worker, 28,000 to 48,000 hospital cleaners and 500 to 7,300 of scavengers outside hospital were infected with needles and syringes.

The separation of IW is still problem. Some medical doctors and nurses and other healthcare workers did not separate IW from garbage. Therefore, the IW collector found blades and needles with garbage in sometime. ICNs interviewed were not aware of the responsible unit of waste management and the types of hospital waste. Whether they were newly assigned or had less experience in infection control needs to be explored. Doctors and nurses are responsible in segregating hospital wastes at the sources of the waste and, thus, they need to know the definition of medical waste. Wastes produced in healthcare facilities in developing countries have raised serious concerns because of the inappropriate treatment and final disposal practices accorded to them.

CONCLUSION

The management of IW by PTSs was started with sources (hospital and health care center) through the incinerator. They have no standard guidelines for work and transport. The policy of managing the IW was not clear. The problem started with the separation, handling, storage and stock been developed. The PTS should develop and provide standard equipments and vehicles with rules prescribed by MoPH and train the PTS workers.

RECOMMENDATIONS

Hospital are recommended that they could build policy and planning for control examine and evaluation system for reduction the number of IW. For the official they could be increase more knowledge for IWM and well quality check for PTS before make a permit, for example, the driver and the license permit from hospital or MoPH. For the hospital IWM, the control measures of IW dispersion should be undertaken, same as clean technology to reduce the volume of the IW which is the way of reduction for the expenditure of IW disposal. The monitoring and control sector for the IW disposal should be set up to take responsibility of the prevention of infectious disease from disposal process by the PTS and other organizations that have the IW disposal service. PTS should provide the IWM know-how of the standards of environmental sanitation. National policy could build the scope of transport, clear IW manifest system, including the development of offices and organizations for setting up standards for working and procedure.

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