



Management of Medical Waste at the Takalar Regency Regional General Hospital, Makassar City

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ABSTRAK

Wastewater originating from hospitals is a very potential source of water pollution. This is because hospital wastewater contains quite high levels of organic compounds, contains dangerous chemical compounds and contains pathogenic microorganisms that can cause disease. The aim of the research is to find out how medical waste is managed including: how to store, collect, collect, transport, manage and final storage which is carried out at the regional general hospital in Takalar, Makassar City. The research method used is a descriptive survey research type, namely to find out how medical waste is managed in the regional general hospital in Takalar, Makassar City. This research was conducted at a hospital to look at the medical waste management system. Room selection is based on rooms that produce a lot of medical waste from hospital services.

Keywords: Management, Medical Waste, at Takalar Regional Hospital, Makassar City

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1. Introduction

Hospital waste water is all medical waste that comes from the process of all hospital activities which includes: domestic medical waste, namely bathroom, kitchen waste, water used for washing clothes, clinical medical waste, namely waste water





originating from hospital clinical activities, for example water. scars from wounds, blood washes. and others, laboratory wastewater, etc.

In 2009, WHO reported that in France there had been 8 cases of health workers being infected with HIV, 2 of which occurred in workers who handled medical waste. This shows that the need for good waste management does not only apply to sharp medical waste but also includes hospital waste as a whole. However, based on the results of the 2008 Rapid Assessment conducted by the Directorate General of the Directorate of Water Supply and Sanitation involving the District and City Health Services, it was stated that as many as 648 hospitals out of 1,476 existing hospitals had 49% new incinerators and had Water Treatment Plants. Waste (IPAL) is 36%. Of this amount, the quality of medical waste that has gone through a processing process that meets the requirements has only reached 52%.

It is known that hospitals are one of society's vital needs, namely as a place to undergo treatment if health problems occur until they recover and return to normal health. Because as a place to care for sick people, hospitals have the potential to be the place and origin of the spread of disease to other people, whether from patients being treated or from contaminated waste. These two sources deserve attention, but from an environmental perspective, waste disposal is of particular concern (Ka'pan, 2014).

Monitoring activities in 2011 carried out by the Sumapapua Ecoregion Management Center, together with the South Sulawesi Provincial BLHD and Regency/City BLHD, revealed the facts that there were no hospitals that had liquid waste disposal permits (IPLC) and carried out self-monitoring. checking the quality of liquid waste, not a single hospital reports the results of monitoring water pollution control, and no hospital carries out daily discharge recording of the liquid waste produced (Ka'pan, 2014).

The results of the quality of medical waste processing cannot be separated from the support for medical waste management. Good medical waste management is very necessary to support the quality of the effluent so that it does not exceed the quality





standard requirements set by the government and does not cause pollution to the surrounding environment.

Based on the Decree of the Minister of Environment of the Republic of Indonesia Number KEP-58/MENLH/12/1995, concerning quality standards for medical waste for hospital activities, that hospitals are required to provide facilities for managing medical waste and solid waste so that all waste that will be disposed of into public channels meets the requirements. waste quality standards determined according to regulations.

There are several groups of people who are at risk of being disturbed because of hospital medical waste. First, patients who come to the hospital to receive medical assistance and hospital care. This group is the most vulnerable group. Second, hospital employees, in carrying out their daily duties, always come into contact with sick people who are the source of disease agents. Third, visitors/deliverers of sick people who visit the hospital, the risk of developing health problems will be greater. Fourth, people who live around the hospital, especially if the hospital disposes of hospital waste products inappropriately into the surrounding environment. The result is that the quality of the environment decreases, with the further consequence being a decline in the level of public health in the environment. Therefore, hospitals are obliged to carry out good and correct management of hospital waste by carrying out Hospital Sanitation activities (Nasir, 2007).

2. Research Method

The type of research used is descriptive survey research, namely to find out an overview of medical waste management in hospitals. The population in this study were all rooms in the General Hospital. The samples in this study were the rooms in the General Hospital that produced the most medical waste, namely the emergency room, surgery and treatment rooms. Method of collecting data. Obtained from the results of observations using a checklist sheet to determine whether medical waste management requirements are met. Secondary data was obtained from documentation from hospitals and agencies related to this research.





3. Results And Discussions

a. Result

1. Creation

The results of research on the medical waste management system at the H. Padjongan Dg General Hospital. Ngalle based on generation can be seen in the following table:

Table 1
Distribution based medical waste management system
waste generation at the Regional General Hospital
H. Pajonga Dg. Ngalle District. Takalar

No.	Room	Arousal	
		Eligible	Eligible Not
1.	Emergency room	√	-
2.	Surgery	√	-
3.	Surgical Treatment	-	√
4.	Dental Poly	√	-
5.	Laboratory	√	-

Source: Primary Data

Table 1 shows that in the medical waste management system based on generation, there are rooms that do not meet the requirements, namely surgical treatment, while the observation results show that the ER, Surgery, Dental Clinic and Laboratory rooms meet the requirements.

a) Shelter

The results of research on a medical waste management system based on storage can be seen in the following table:

Table 2
Distribution based medical waste management system
waste collection at the Regional General Hospital
H. Pajonga Dg. Ngalle District. Takalar

No.	Room	Shelter	
		Eligible	Eligible Not



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1.	Emergency room	√	-
2.	Surgery	√	-
3.	Surgical Treatment	-	√
4.	Dental Poly	√	-
5.	Laboratory	√	-

Source: Primary Data

Table 2 shows that in the medical waste management system based on medical waste storage, there are rooms that do not meet the requirements, namely surgical treatment, while the observation results show that the ER, Surgery, Dental Clinic and Laboratory rooms meet the requirements.

b) Transportation

The results of research on a medical waste management system based on transportation can be seen in the following table:

Table 3
Distribution based medical waste management system
transporting waste at the Regional General Hospital
H. Pajonga Dg. Ngalle District. Takalar

No.	Room	Transportation	
		Eligible	Eligible Not
1.	Emergency room	√	-
2.	Surgery	√	-
3.	Surgical Treatment	√	-
4.	Dental Poly	√	-
5.	Laboratory	√	-

Source: Primary Data

Table 3 shows that based on the results of observations using a checklist sheet in five rooms that produce a lot of medical waste, it can be explained that the transportation carried out for all medical waste meets the requirements.

c) Processing





The results of research on the medical waste processing system at the H. Padjongan Dg General Hospital. Ngalle based on medical waste processing can be seen in the following table:

Tabel 4

Distribusi sistem pengelolaan sampah medis berdasarkan pengolahan sampah di Rumah Sakit Umum Daerah H. Pajonga Dg. Ngalle Kab. Takalar

No.	Room	Processing	
		Eligible	Eligible Not
1.	Emergency room	-	√
2.	Surgery	-	√
3.	Surgical Treatment	-	√
4.	Dental Poly	-	√
5.	Laboratory	-	√

Source: Primary Data

Table 4 shows that the distribution of the medical waste management system at the H. Pandjongan Dg Regional General Hospital. Looking at the five rooms that were selected as research samples, namely the ER, Surgery, Surgical Care, dental clinic and laboratory, it was found that the processing system did not meet the requirements.

d) Disposal

The results of research on a medical waste management system based on disposal in rooms that have been selected as research samples, namely the Emergency room, Surgery, Surgical Care, dental clinic and laboratory in hospitals can be seen in the following table:

Table 5

Distribution based medical waste management system Disposal at Regional General Hospital H. Pajonga Dg. Ngalle District. Takalar

No.	Disposal





	Room	Eligible	Eligible Not
1.	Emergency room	√	-
2.	Surgery	√	-
3.	Surgical Treatment	√	-
4.	Dental Poly	√	-
5.	Laboratory	√	-

Source: Primary Data

Table 5 shows that the distribution of medical waste management systems is based on the disposal system at the H. Pandjongan Dg Regional General Hospital. Ngalle in the five rooms that had been selected as research samples, namely the Emergency room, Surgery, Surgical Care, dental clinic and laboratory, it was found that the processing system met the requirements.

e) Facilities

Facilities are facilities that really support the process of managing medical waste in hospitals. If they are not supported by facilities that meet the requirements, the management system will also not be good. The results of the research based on the facilities available in connection with the medical waste management system in hospitals can be seen in the following table.

Table 6
 Distribution based medical waste management system
 Facilities at the Regional General Hospital
 H. Pajonga Dg. Ngalle District. Takalar

No.	Room	Facilities	
		Eligible	Eligible Not
1.	Emergency room	√	-
2.	Surgery	√	-
3.	Surgical Treatment	-	√
4.	Dental Poly	√	-
5.	Laboratory	√	-





Source: Primary Data

Table 6 shows that the distribution of medical waste management systems based on existing facilities obtained rooms that meet the requirements and have facilities that are still suitable for use, namely the Emergency Room, Surgery, Dental Clinic and Laboratory, while the results of observations of supporting facilities for managing medical waste are inadequate and does not meet the requirements, namely in the surgical treatment room.

b. Discussion

1. Medical waste management system

1) Incurrence

The medical waste management system in hospitals begins by looking at how waste generation occurs. Medical waste in hospitals generally comes from the remains of medical procedures carried out in hospitals such as used bandages, cotton wool, syringes, dangerous chemicals originating from laboratories. The generation rate will increase if it is not managed properly.

The results of research on the medical waste management system based on the accumulation of rooms that do not meet the requirements, namely surgical treatment, are influenced by the large amount of medical waste produced in surgical treatment carried out by patients, patients throw away random waste such as putting it in an ordinary plastic bag and then storing it in the corner of the room or in front of the patient's room door. This happens because patients do not know the dangers that medical waste in the hospital will cause, that this will pose a danger to other patients or hospital visitors.

Rooms that meet the requirements based on the volume are the emergency room, surgery, dental clinic and laboratory. The results of observations made by researchers show that this is because the results of medical waste that has been used by staff are immediately thrown into special trash bins provided by the hospital. and from the aspect of knowledge about the dangers that will arise if medical waste is understood by officers so that they have anticipated





that waste in the form of medical waste should be of particular concern to officers.

The results of this research are in accordance with the results of research conducted by Nasir, M. 2007, that the danger posed by medical waste or medical waste originates from how it is handled and the attention of officers to place medical waste in a special place to prevent disease transmission.

The process of sorting and reducing waste should be a continuous process whose implementation must take into account: smooth handling and storage of waste, packaging and clear labeling of various types of waste for cost efficiency, personnel and disposal.

2) Shelter

The medical waste management system based on medical waste storage contains rooms that do not meet the requirements, namely surgical treatment. At this stage it can be seen that the condition of the available temporary waste storage containers no longer meet the requirements both physically and especially regarding cleanliness. Compared to other rooms, especially in surgical treatment rooms, new trash bins have not been replaced because the procurement of trash bins has also been carried out in stages.

The recommended use of plastic bags to make emptying and transporting easier has also not been implemented because there are still temporary waste storage places that are not lined with plastic bags. At the collection and storage stage, it is recommended that medical and non-medical waste be separated, but in reality it is still often found that non-medical waste is disposed of in the same waste storage areas as medical waste.

In the management of medical waste, standardization of bags and containers is carried out, such as using bags of various colors as stipulated in the Republic of Indonesia Minister of Health Regulation no. 986/Men.Kes/Per/1992 where yellow bags are for infectious waste, purple





bags have a cytotoxic waste symbol, red bags have a radioactive waste symbol and black bags are for domestic waste.

a) Transportation

Garbage transportation begins with emptying the rubbish bins in each room and transporting them to the final disposal site. The results of observations using a checklist sheet in five rooms that produce a lot of medical waste can be explained that the transportation carried out for all medical waste meets the requirements.

Waste transportation carried out at H. Padjongan Dg. Ngalle is carried out twice every day, especially in the morning for every service activity in the evening and in the afternoon for waste products from morning activities.

From a routine aspect, the transportation of waste carried out in hospitals is quite good, but sometimes the transport of medical waste does not always use special transport equipment that is used to transport medical waste, and sometimes the waste workers transport it simultaneously and sometimes in the process of transporting the waste it gets mixed up again.

3) Processing

The research results show that the distribution of the medical waste management system at the H. Pandjongan Dg Regional General Hospital. Ngalle in the five rooms that were selected as research samples, namely the Emergency Room, Surgery, Surgical Care, dental clinic and laboratory, it was found that the processing system did not meet the requirements. This is because the processing equipment in the hospital is not functioning. The incinerator is no longer functioning so that the medical waste produced is only destroyed by ordinary burning without using an incinerator and the frequency of burning of the medical waste is not regulated and not all of the medical waste is burned completely.

Based on this, it can be concluded that the medical waste management system in general, from the collection/storage stage to the processing stage, has not





been properly integrated because there are stages of the management system that do not meet the requirements.

The results of this research are in accordance with the results of research conducted by Maimunah, 2002 at the Sinacang Belawan Leprosy Hospital that the waste processing system was not implemented because it was constrained by the absence of processing equipment that met the requirements..

4) Disposal

The disposal system is the last system in a series of medical waste management systems that must receive serious treatment by hospital management, this is because if the disposal of medical waste is carried out in a non-specialized place then the potential for causing injury to other people will be even greater, and if that happens If this occurs, disease transmission will also increase.

The results of this research show that the distribution of the medical waste management system is based on the disposal system at the H. Pandjongan Regional General Hospital Dg. Ngalle in the five rooms that were selected as research samples, namely the Emergency Room, Surgery, Surgical Care, dental clinic and laboratory, it was found that the processing system met the requirements. This is because the officers in this system properly dispose of medical waste. However, in this study the researchers only looked at the disposal carried out by officers in each unit, but for final disposal the researchers did not survey the final disposal site.

Conditions of supporting factors in waste management include: facilities/equipment, officers.

5) Facilities

Several conditions that must be fulfilled by the medical waste management system are in accordance with Kep. Director General of PPM/PLP, 1993 is a minimum requirement for waste containers to be made of watertight material,





easy to clean, not easy to rust, have a lid, easy to empty and do not make noise. The use of plastic bags in different colors is highly recommended, apart from making transportation easier, these plastic bags can also reduce direct contact between microbes and humans and can reduce the odor caused by medical waste.

The results of research on the distribution of medical waste management systems based on existing facilities showed that rooms that meet the requirements and have facilities that are still suitable for use are EMERGENCY ROOM, Surgery, Dental Clinic and Laboratory, while the results of observations on supporting facilities for managing medical waste are inadequate and inadequate. meet the requirements, namely in the surgical treatment room, there are still uncovered trash cans which cause an unpleasant odor that disturbs visitors who come to the hospital.

In terms of facilities and infrastructure, the problem faced by hospitals in achieving waste management targets is the lack of self-awareness of the community to jointly maintain waste inventory. This is due to the frequent loss and damage to the trash cans provided by the hospital, so they have to be provided repeatedly even though the funds available are limited. Apart from that, the condition of the existing landfill needs to be revitalized to create a landfill location that is safe from environmental pollution. Apart from that, the scope of waste services needs to be increased along with the increase in the amount of waste generated to avoid piles of waste being scattered around.

6) Officer

Apart from the availability of facilities that support the implementation of medical waste management, to implement a medical waste management system that meets the requirements, efforts are also required by officers such as separating medical and non-medical waste, transporting medical waste which is carried out 1 x 24 hours or when 2/3 of the bag is empty. has been filled with rubbish and medical waste must be destroyed using an incinerator





that has a combustion chamber of 1000°C so that it can burn the rubbish completely.

Waste management officer at the District General Hospital. Takalar specifically functions to collect all types of waste without distinguishing between officers who specifically handle medical waste and sometimes do not use protective equipment such as gloves and masks when working to collect medical waste so that the chance of injury due to the smell of medical waste is greater.

To prevent accidents from occurring due to medical waste made from sharp objects, it is recommended that officers use personal protective equipment which is also useful for direct contact with medical waste.

4. Conclusion

- 1) Based on the results of the analysis regarding the medical waste management system at the H. Padjonga Dg General Hospital. Ngalle District. From Takalar it can be seen that the methods for storing, collecting, collecting and transporting are good, but the medical waste management system is less functional, especially the problem of destruction.
- 2) Based on the results of analysis of observation data regarding the condition of supporting factors in waste management including: facilities/equipment, it is known that officers' actions in managing medical waste are still not in accordance with the mechanism for handling medical waste, while the facilities that support the implementation of the medical waste management system are mainly in the operating room has not been implemented properly.

Compliance with ethical standards

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Disclosure of conflict of interest

This research collaboration is a positive thing for all researchers so that conflicts, problems and others are absolutely no problem for all writers.

Statement of informed consent

Every action we take as authors is a mutual agreement or consent.

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