

Hospital Waste Management at Shaikh Zayed Hospital

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SUMMARY

Shaikh Zayed Hospital, a 400 bed facility, generates 850 Kg per day or 330 kilo tons per year of waste. Infectious waste is about 10% of all waste and includes plastic bags, catheters, syringes, cannulas and needles. Sharp and needles form the most infectious part of the waste. Proper handling and disposal is utmost for infectious waste and incineration the best mode of disposal.

INTRODUCTION

A hospital is a unique factory where human beings are processed for defects and ailments brought on by a change in environment and treatment involves the re-establishing of internal environment.

A hospital generates unique kinds of waste which range from the toxic to the infectious. The hospital thus needs special disposal systems and a rigid adherence to waste disposal protocols.

At Shaikh Zayed Hospital we are trying to achieve the best we can considering the restraints of facilities, know how and the general awareness of people.

MATERIALS AND METHODS

A thorough review of the various types of hospital waste collected, modes of collection and disposal were reviewed. Data was collected from the Department of Sanitation, Department of Pharmacy and various wards, laboratories and theatres. Hospital policies regarding waste disposal especially infectious waste were reviewed.

RESULTS

The hospital waste at Shaikh Zayed Hospital is generated from three main sources i.e., the wards, the operation theatres and the laboratories. The types of waste generated from each source is multi-

natured. So it may be convenient to consider each type of waste individually. The total amount of waste generated is about 850-1000 Kg per day.

Table 1: Hospital waste.

Total waste	850 kg
Plastic Waste	
- Urinary bags	300/day
- Foley catheters	500/day
- I.V. bags	700/day
- Syringes	2000/day
Needles	1100/day
- I.V. Cannulas	240/day
Total waste at Shaikh Zayed Hospital.	

1. Waste in general (Kitchen waste)

Boxes, paper or ordinary waste as generated in the kitchen or wards is disposed off as ordinary waste. This is shifted to a waste dump from where it is disposed off to the municipal dumps.

2. Clothing

Clothes and bed sheets that are soiled beyond use and the discards are incinerated.

3. Glass ware

Glass ware used in the laboratories is autoclaved/sterilized and re-used. Thus the infectious material is rendered safe and then

the solid waste is incinerated. This process is applied to test tubes, pipettes, flasks and other glass ware as used in various laboratories e.g., biochemistry, hematology, histopathology and microbiology.

Glass waste especially empty vials and bottles are disabled and disposed off as glass. The glass is re-cycled in the market.

4. Plastic ware

Each day about 700 i.v. bags. 300 urinary bags. 500 foley catheters and 2000 syringes are discarded. Empty bottles, catheters, intravenous fluid bags, urinary bags and syringes are disabled and then disposed off as plastic. This plastic is usually re-cycled in the market.(see Table 1)

5. Metal ware including needles

Metal cannulas, needles etc. form only a small part of the total waste. These, however, are the most infectious of all the waste. Each day 1100 needles i.v. cannulas, surgical needles are discarded. The needles are collected in sharps boxes after being disabled and then disposed off. (see Table 1)

6. Infectious materials

a) Microbiology specimens

Microbiology specimens, cultures etc., are rendered non-infectious through autoclaving. The solid waste so generated is then incinerated.

b) Histopathology specimens

Histopathology specimens are preserved in formalin for up to six months and then incinerated.

c) Blood products and specimens

Blood samples left over after testing are discarded into the sewage. The glass ware is cleansed, autoclaved and re-used.

d) Needles

7. Toxic chemicals

These include the chemical re-agents and the by-products of chemical reactions as a result of tests performed in various laboratories. These are simply dumped off into the sewage.

8. Radio active waste materials

A small amount of radio active waste is generated as a result of radio-immuno assays. The waste (test tubes & effluents) generated is collected in lead containers. The waste is finally disposed off to the Atomic Energy Center.

MODES OF DISPOSAL

1) Municipal garbage dumps

Most of the solid kitchen waste is disposed off to the municipal waste dumps.

2) Sewage

Most of the liquid waste including discarded chemicals, blood specimens and excreta are washed away into the sewers. The sewage is disposed off as other city sewage.

3) Incineration

Solid waste after autoclaving and other waste suspected of being infectious e.g., discarded clothing, plastic ware (syringes, I.V. bags, etc.) are incinerated.

Shaikh Zayed Hospital is fortunate to have the most important ingredient for disposal of infectious material, that is the incinerator. All waste liable to the infectious is incinerated.

4. Recycling

Radiology chemicals, non-infectious plastic ware and glass ware can be easily recycled.

DISCUSSION

Hospital waste generated at Shaikh Zayed Hospital is about 2.125 Kg/day/hospital bed which is almost twice the average in Punjab i.e. 1.18 Kg/hospital bed/day⁸.

Medical waste is probably less than 1% of all waste¹. Most of the solid waste is combustible. Non-combustibles (metals e.g. needles & glass) are probably less than 1% of all medical waste². Fortunately the hospital waste is not any more infectious or toxic than the usual city waste. Effective disposal suffices³. Pathogenesis of hospital waste is the same and not any different from city waste⁴. There is practically no epidemiologic evidence documented of diseases in the community caused by hospital waste^{1,3}. The estimated bulk density of hospital waste in Punjab is 560 Kg/M³.

Solid waste can be easily disposed as other city waste in waste pits. Incineration is a viable option for solid waste especially one liable to be infectious. Currently 10% of the solid waste is incinerated⁵. It may increase as environmental pressures increase.

Potentially infectious material i.e., I.V. bags, tubings, syringes, and glass bottles and vials need to be disposed off carefully. They should be disabled to prevent any re-use especially the plastic syringes. Incineration currently seems to be the best option for disposal of potentially infectious material. Shaikh Zayed Hospital is using a gas run, high temperature incinerator. Monitoring of effluent gases needs to be added. The heat value of hospital waste is 12,934 Kj/Kg, which is higher than the municipal waste (11,140 Kj/Kg)⁸.

Needles form the most infectious of all items and needle injuries during disposal or handling form the most important source of infectious injuries. They should be disabled and disposed in sharp boxes. Hepatitis B & C are quite common in our communities, though HIV is still quite rare^{6,7}.

The population at greatest risk to hospital waste are the janitors, cleaners, laundry personnel, nurses and laboratory personnel (bleeding staff) who deal with infectious waste especially needles [6]. Safe handling practices are the most effective way of avoiding such injuries [6,7].

In summary awareness of waste related hazards and the know how would be most important ingredient for safe hospital waste disposal. Lack of facilities is usually not the main reason for improper disposal. Incineration would be the backbone of disposal of infectious material. Protection of needle injuries can be best helped through proper handling.

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