

Decision Making Investigation in Medical Waste Management in Jordan: A Case Study at Jordan University Hospital

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Abstract: As all over the world, the production of medical waste in Jordan has augmented obviously. Over the last few decades, in spite of the grave effectuations of medical wastes on humans and the environment, only light weighted heed has been pointed to its proper treatment and elimination. This study was conducted as a case study at one of Jordan leading medical centers, namely, the Jordan University Hospital (JUH). Its aim was to record the current status of medical waste management at JUFH and proposition contingent measures to evolve it. In general, it was found that the center administration was acquainted the significance of Medical Waste Management (MWM) and pursuit some of the measures to treat waste gathered at the hospital. However, it was also found that significant blanks were present that need to be highlighted in the future including: effective separation, the utilization of coded and colored containers, better treatment and transportation means, and better surveillance and pursuit techniques, as well as the necessity for training and realization programs for the staff.

Key words: Jordan University Hospital (JUH), Medical Waste Management (MWM), waste management plan

Introduction

Although medical wastes represent a relatively small parcel of the overall waste produced by a community, Medical Waste Management (MWM) is considered as an important affair worldwide. Over the past two decades, medical wastes have been identified as one of the prime labyrinths that negatively affect not only the human but also the health and the environment. The wastes have lurked the endurance of humans and other creatures, as well as all natural exchequers that are necessary to human subsistence.

MWM is gazed as a primary question worldwide. The accretion of the medical turf around the world over the last decade joined with an increase in the anticipation of disposable medical products has pool to the large saucepan of medical waste being generated [1]. It is of great weightiness to manage medical waste in a proper technique to evade health

jeopardy and damage to flora, fauna, and the environment. Improper waste management can cause environmental defilement, nasty odors, and increase of rodents and worms; it may lead to transmission of diseases like typhoid, and hepatitis through injuries from sharps infectious with human blood [2].

The World Health Organization (WHO) defines healthcare waste as all waste generated by healthcare establishments, research facilities and laboratories [3]. This qualifier also includes waste that originates from “minor” sources such as waste generated in homes where there is patient care such as dialysis or insulin injections. Through this study, the term (medical waste) is utilized to mean the clinical parcel of waste generated in medical facilities, unless otherwise specified.

Jordan has made fundamental evolution in all the regions dealing with health operation, and many of the ameliorations indicating improvements the potential that has been made by the Ministry Of Health (MOH) which estimated the number of beds in the country in 2007 at 11,029, compared to about 10,000 in 2002. Yet, in Jordan, little emphasis has been placed on the proper handling and disposal of medical waste.

The generated medical waste from all Jordanian hospitals is approximately 9.4 tons/day [4]. It was reported that medical waste in Jordan suffers from serious mismanagement pursuits that, generally, veer substantially from the standard acceptable pursuits established by relevant international bodies [3].

In light of all the above, this study was instigated and intended as a case study in Jordan. It was conducted in Jordan University Hospital (JUH) in Amman, which is one of the leading medical centers in Jordan. The goal was to report on current status of regulations and practices regarding MWM in PHH in order to identify the areas of good and acceptable medical waste handling procedures, indicate mismanagement practices, and propose potential remedies and solutions.

Description of the JUH

The Hospital has started its work by issuing the Royal decree on January 1st, 1971 to establish Amman Great Hos-

pital, annexed to the University of Jordan in 1975 under the Royal decree to become the Jordan University Hospital. It is the first university teaching hospital in Jordan, and one of the first university teaching hospitals at the level of the Arab World. It is located in a commanding location in the north-west of Amman -the capital of Jordan- within easy access to patients from different areas of Jordan.

. It has obtained a number of international accreditation certificates as following:

- The Health Care Accreditation Council (HCAC) with excellence for three years.
- Joint Commission International (JCI).
- ISO 9001 Certificate.
- Hazard Analysis and Critical Control Points (HACCP) Certificate.
- HCAC National Quality & Safety Goals.
- King Abdullah II Award for Excellence in Government Performance and Transparency

The main building of JUH consists of seven floors in addition to patient's clinics and nursing house, the hospital has a capacity of 231 beds distributed among the different departments. It offers a wide range of specialties and services [5].

Clinical and major specialties included

1. Department of Special Surgery.
2. Department of Internal Medicine.
3. Department of General Surgery.
4. Department of Pediatrics.
5. Department of Obstetrics & Gynecology.
6. Department of Dentistry.
7. Department of Radiology & Nuclear.
8. Department of Anesthesia.
9. Department of Laboratories and Forensic Medicine.
10. Department of Physiotherapy.
11. Department of Accidents and Emergency.
12. Pharmacy.

Methodology

The JUH was selected because it is one of Jordan, biggest, most sophisticated, and extensive medical assembly. Consequently, the methodology JUH of this particular study was a two stage strategy:

- ❖ Becoming customary with the procedures, and regulations preceded by the center's Directory to be followed by the concerned staff regarding the management of medical waste generated at the center.
- ❖ Spending enough time in the different departments of the center registration annotations and writing notes in a crucial manner about the pursuits of the medical waste management by the concerned personnel.
- ❖ A waste management plan was inserted that included education, training and auditing of the kind and size of waste produced by each department.

These three steps were accomplished with the help and guidance of a specialized officer and were meant to report reliable results and conclusions regarding the ambit to which the medical waste is expatiated at the JUH in light of written policies and established international standards in this regard.

Medical waste management in JUH

The MWM in JUH is directed by a board appointed for the purpose of administering medical waste expatiating in the compound. The board meets on a regularly basis and releases recommendations to all the center's departments and oversees the implementation of the management rules by the concerned staff. Annotations during carrying out this study indicated that, in general, good management practices of medical waste do exist in JUH including:

1. Founders procedures for the gathering, demarcation, alienate and disposal of medical waste such as:
 - ❖ Distinguishing waste type,
 - ❖ demarcation nonmedical waste from medical waste,
 - ❖ Utilizing suitable classified bags based on a color guideline,
 - ❖ Putting waste in pellucid labeled bags in case of lack of an suitable bag type,
 - ❖ Transporting all waste bags on wheeled cisterns and utilizing utility gloves when handling with broken bags and waste and then disinfecting them.
2. Compelling strict regulations when handling with sharps and in case of injuries caused by sharps.
3. Stratifying specific executions for the disinfection of contaminated instruments.

4. Utilizing high-level disinfection (solution) and applying various sterilization approaches like steam or hot-air for surgical and other instruments.

5. Foundation disposal subcommittees in different divisions to observe the disposal of medical waste. Upon secession of waste into medical and non-medical fractions, the major disposal and predisposal [6] practices of medical waste in JUH include:

- ❖ Gathering of specific waste items like syringes, gloves in yellow bags and then transporting them to the crematory.
- ❖ Gathering the storing sharps in sharps containers,
- ❖ Washing surgical tools and hoarding them in bags before transferring them to sterilization,
- ❖ Placing body parts in classified bags prior to dispatching them to the dead refrigerator.

6. Personnel including housekeepers and allied-health personnel involved in waste disposal were interviewed to determine their lore about waste identification and the understanding of the disposal method. The kind and size of waste produced from all hospital areas was audited.

Annotations were noticed on the number of skips (steel containers filled with infectious waste) being burned per month for 3 months before the intervention (January to April 2013). A waste management plan was issued and the goals were to decrease the size of waste being burned by source reduction and to determine the “infectious waste” and the disposal method for each waste type.

Infectious waste was defined as “specific kinds of waste generated by patient diagnostic and therapeutic procedures that are capable of producing an infectious disease and must be disposed of in such a manner so as to minimize the risk of infection to health care workers, sanitation workers, and the general public.” [7].The types of infectious waste requiring burning are listed in Table 1.

Maintenance cost

The cost of maintenance, wear and tear on trucks and crematory was difficult to calculate but the savings in the decreasing of spare parts used in the year 2012 compared with 2013 was predestined at 2000 JD (US \$2817) per year. The reduction of spare parts was a result of the reduced amount of waste and subsequent capacity to coggling the operating temperature. Therefore; there was a lower cost tolerated by the prologue and the maintenance of the waste management plan.

Table 1. Summary of infectious waste management plan

Waste category	Examples	Orange bag (incineration)	Black bag (sanitary landfill)
Microbiology Pathologic waste	Stocks of infectious agents Placentas, organs (gathered in laboratory for interment)	X	
Blood/blood products (fluids)	Blood containers, Aspirators jars, evacuated containers		
Auspices units/outpatient clinics: <20 mL vol contained >20 mL vol contained		X	X
Laboratory: <20 or >20 mL vol		X	
Blood-contaminated articles : If satiated and/or dripping Not satiated and/or dripping	Paper Spread, gauze and gloves	X	X
Isolation/operating theatres	Common Infectious	X	X
Sharps	Contaminated needles, syringes, lance, barb and broken glass	X (Sharp boxes)	
Contaminated animal corpse, body parts, and bed clothes	Contaminated animal corpse, body parts, and	X (Carcasses)	
Other hospital waste		X	

Conclusions and recommendations

Based on the findings of this study, the following conclusions may be drawn:

- ❖ The aim of the MWM plan was to lessen the size of destined waste by laying it off from general waste.
- ❖ The frugality is more than what we estimated because maintenance of all devices and the labor cost associated with staff involved in gathering the waste was not included.
- ❖ The waste management plan that we instigated had many daring phases. First, the pedagogical program was not an easy mission. The most complicated phase of the effort was alternating or modifying the behavioral stand of the hospital staff.
 - ❖ The staff at the JUH is aware of the importance of managing medical waste produced at the hospital.
 - ❖ Parting of waste produced into medical and non-medical waste is practiced to a pleasant range.
 - ❖ Lack aspects in the medical waste treatment system at the JUH do exist most notably of :
 1. Baulk to quantify the waste produced in reliable archives.
 2. Shortage of the utilization of colored bags by restricting the bags to only one color (yellow) for all wastes.
 3. The necessity for training the personnel on how to treat the hazardous waste.
 4. The necessity for founding national standards, especially for medical waste packaging.
 - ❖ At the domestic level, the JUH may be considered as a good example in comparison with the other medical centers as far as MWM is concerned.
 - ❖ The presenting of a written policy on waste management was critical in achieving waste reduction and cost savings.
 - ❖ An obvious and accurate determination of “infectious waste” on the basis of the Environmental Protection Agency (EPA) guidelines was included in the policy. In addition, infec-

tious waste classifications were determined in a table that explained the disposal method of specific items (Table 1).

References

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