MANAGEMENT OF WASTE FROM HEALTH CARE FACILITIES

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ABSTRACT

Due to the threats to human health and the environment posed by improper waste management techniques, healthcare waste management is attracting increased attention. This study set out to analyse healthcare waste management methods in hospitals in India focusing on the risks perceived by and real dangers to healthcare workers. Three of the region's six hospitals participated in the study, representing 41% of total available beds. We gathered information by means of questionnaires, in-person interviews, and close observation. Correct waste separation was shown to be positively correlated with the frequency of interaction with the waste, suggesting that this is the most prevalent area of healthcare waste practise where improvements might be made. The healthcare employees' risk perceptions are positively correlated with the frequency of contact: they are highest for the environment (4.24) and trash workers (4.08) and lowest for patients (3.29) and visitors (2.80). The problems of the correct separation of wastes and the lack of awareness concerning the importance of that separation are related to the risk perceptions of healthcare professionals. Needle sticks and other sharps injuries are more common in direct patient care than in waste disposal, and their prevalence is directly proportional to the specific duties performed by each healthcare profession (doctors, nurses, and housekeepers). Furthermore, the management methods related to, and the perceptions of risk pertaining to, healthcare wastes appear to have been conditioned by statutory definitions and classifications of healthcare wastes.

Keywords: *waste, Threats to Human Life, Environmental pollution, Healthcare workers.*

INTRODUCTION

The topic of this paper is the administration of medical waste. Pathological waste, chemical waste, and health care waste-related hazards are all described. This paper focuses on the specifics of healthcare waste management, including the handling of hazardous waste, waste minimization strategies, the separation of healthcare waste streams, the recycling and reuse of healthcare waste, and the treatment of healthcare waste. This article provides useful information for reducing the dangers that healthcare workers face when disposing of medical waste. Generally speaking, anything that is discarded as a result of medical care is considered healthcare waste. It's possible to hear it referred to as infectious waste, hazardous waste, or hospital waste. The most common ones are inpatient and outpatient facilities, as well as specialized centers for obstetrics and gynecology, emergency rooms, and so on. In addition to legal drug users, one can find these materials at tattoo parlours, piercing shops, psychiatric hospitals, and dental practises. There are two main types of healthcare waste: the less dangerous "general

waste" and the more dangerous "healthcare risk waste." Health care facilities generate between 75% and 90% general waste. Everything from newspapers and magazines to cardboard boxes and dust falls into this category. If it has not come into contact with any hazardous wastes, it can be disposed of in the same manner as other non-hazardous wastes. Needles, lancets, syringes, blood, body fluids, contaminated surgical instruments, delivery bowls, used gauzes and gloves, plasters, etc. make up the remaining 10-25% of waste that is considered hazardous. Drugs, laboratory reagents, and other chemicals may be in it past their expiration dates. The safe management of hazardous wastes should be the primary focus here. Although they may not seem dangerous at first glance, non-hazardous wastes can become contaminated with dangerous substances if they are not handled and segregated properly. Dangerous medical waste can be sorted into a few distinct categories: Pathogen-containing waste, also known as infectious waste. This includes anything that has come into contact with faeces or a patient who has been infected, such as a used dressing or swab. Liquid waste consists of things like faeces, urine, blood, and other bodily secretions.

Human body fluids, organs, foetuses, and other pathological waste. As a subset of pathological waste, anatomical waste includes only recognisable human remains. Objects that could cause injury, such as needles, infusion sets, scalpels, blades, and shards of glass. Drug discards include medicine that has either run its course or is no longer required, as well as anything that has come into contact with a drug or a drug container. Genotoxic waste consists of any materials that contain substances with genotoxic properties, such as chemicals and medications.

Laboratory reagents, film developer, obsolete disinfectants, and unused solvents are all examples of chemical waste. Batteries, broken thermometers, blood pressure gauges, and other similar items are examples of the types of waste that contain significant amounts of heavy metals. Gas cylinders, gas cartridges, and aerosol cans are all examples of pressurised containers. Containing radioactive materials, as generated during radiotherapy or in the course of scientific inquiry.

The Importance of Healthcare Waste in Public Health Healthcare waste comes in a wide variety of forms, and its annual production is on the rise. In addition, the general waste component will inevitably become contaminated and must then be regarded as hazardous if there is little or no segregation of non-hazardous and hazardous waste. The healthcare facility's employees and the general public both face risks from healthcare waste if it is not properly managed.

Dangers of Bio hazardous Waste

There is a wide range of potentially harmful microorganisms that could be present in infectious wastes. Punctures, abrasions, and cuts in the skin, which could have been caused by contaminated sharps, are common entry points for microorganisms into the human body. In addition to entering through the skin, pathogens can enter the body through the mucous membranes of the eye, mouth, and nose, as well as through inhalation and ingestion. Human immunodeficiency virus (HIV) and hepatitis B and C infections are of particular concern when it comes to healthcare waste. Stick injuries contaminated with human blood are the most common route of transmission for these viruses. Needlestick wounds are piercing wounds caused by a needle or another sharp object. All workers who come into contact with medical waste should be immunized against HBV to reduce the spread of the virus. A vaccine for hepatitis C has not yet been developed.

Controlling Dangerous Medical Waste

Infectious waste from hospitals must be contained in order to lessen their impact on the public's health. Waste minimization, identification and segregation, recycling, sufficient packaging, handling and storage, and appropriate treatment and disposal are all necessary steps towards this end.

Problems with Garbage Collection

When it comes to garbage, there are a few fundamental rules to follow. At the point of waste generation, whoever is creating the waste is responsible for sorting the waste into the appropriate containers. The medical and support staff need to be educated on the importance of properly sorting, packaging, and labelling all healthcare waste. Each room should have charts with relevant information posted on the walls. Healthcare waste transportation carts and recycling containers should be sterilised after each use. When dealing with infectious waste, all janitorial workers and sweepers must wear protective gear such as face masks, aprons, boots, and heavy duty gloves.

Warning signs of trouble and advice for fixing them

Based on the results, it appears that the majority of hospitals are having issues in the areas of human resource training and environmental/economic management. Four of the six hospitals showed subpar performance on both measures. That's why it's possible to propose changes to these two metrics as a means to boost the IGeReS's performance. Lack of employee understanding of the HCWM and the fact that not all employees are effectively trained and/or oriented to the healthcare waste management plan (HCWMP) and HCWM were cited as the most common issues with employee training. Each issue has a simultaneous remedy. While it is well-known that training necessitates the commitment of both time and resources, it is imperative that all employees directly involved in HCW receive training (e.g. cleaning staff, nurses, nursing technicians and doctors). The hospital could decide whether or not to provide such trainings, but if they did, participants should learn not just how to safely manage HCW (by segregating it, correctly packing it, and so on), but also why this is important and how improper management could harm people and the planet. Trainings of this sort can also promote more eco-friendly behaviour, such as the prevention of waste production or its minimalization. This regulation, which mostly applies to paper towels and plastic drinking cups, is prevalent in several of the analysed hospitals. This is a good step in the right direction, but they also need to get inventive in their efforts to lessen the production of toxic waste. Many people could reasonably worry that this could endanger both patients and workers, yet actively choosing to produce less waste rather than more has no downsides and numerous upsides, not the least of which being financial. Many methods, including (a) reducing the acquisition of medical materials and supplies, particularly those less risky that produce less waste, are discussed by Voudrias (2018) in an effort to decrease the development of hazardous HCW. As a result, healthcare facilities should (a) adopt appropriate management and control methods, particularly with regards to the acquisition of chemicals, medications, and other supplies; and (b) phase out the use of mercury products in favour of those that do not necessitate specialist disposal. In addition, the author recommends that healthcare facilities utilise the Life Cycle Assessment software application to help the healthcare industry become more environmentally friendly. As a result, although hospitals reported more difficulty with employee training and sustainable procedures, these criteria offer easy answers because they are practically unrelated to financial resources. All parties involved in the HCWM,

including hospital administration, must work together and be committed to the cause for any of these measures to be effective.

Reducing Waste

To begin with, and foremost among, waste management objectives, one must focus on reducing waste. Reducing the amount of trash that needs to be hauled away or burned in incinerators is an effective way to lessen environmental damage and improve air quality. The health care provider should always keep in mind that the materials and supplies they buy should generate no or little waste in order to effectively minimise waste. Minimizing waste is always a good idea, but not if doing so compromises patient care or introduces any sort of infection risk.

Disposal of Medical Waste Separately

Segregation refers to the process of sorting trash into distinct bins. Medical garbage is typically separated into bins and bags according to colour. This action needs to be taken right when the trash is made. It is important for healthcare workers to properly segregate waste so that it can be disposed of in an efficient and environmentally friendly manner. It is recommended that healthcare facilities provide different-colored trash cans for different types of trash. The goal of the color-coding system is to facilitate quick, simple, and clear identification and segregation of the various types of waste that healthcare workers may encounter.The following containers and colour codes have been designated for use depending on the specific hazards at hand:

All black trash containers and bags contain inert medical waste.

Safety boxes for sharp objects are yellow, as are all other containers used to dispose of potentially infectious materials from healthcare settings.

Red indicates the presence of a container containing hazardous materials or waste.

Glass medicine vials, ampoules, and other glass pharmaceutical packaging should be placed in a white recycling bin.

It's important to remember that in a Health Post with limited resources, heavy metals and other effluents can be treated like any other infectious waste and disposed of in yellow containers rather than the red ones. Heavy metals and other effluents should not be incinerated at final disposal sites, so please keep that in mind.

Healthcare Resource Reuse and Recycling Reusing an item without altering its appearance or physical properties is called waste reuse. As with most things, recycling waste requires some kind of processing, usually in a different location, to create a new and different product.

After proper cleaning and disinfection, some types of medical waste, such as glassware, can be reused. The items need to be submerged in a 0.5% chlorine solution for 10 minutes, washed with a brush and soap, rinsed, and dried thoroughly before use. It is imperative that all healthcare workers wear gloves at all times while disinfecting. After

washing, health professionals are advised to autoclave the glassware at 121 degrees Celsius for at least 30 minutes to kill any remaining germs and bacteria. Glassware should only be reused if it is in good condition and has not been broken, as broken glass constitutes sharp waste. Recyclables include clean glass and plastic bottles. Since different bins are needed for recyclables, the criteria for sorting them may tighten and the amount of work required of individuals may rise.

Installation of Crash Boxes

Every time a health care worker uses a sharp object, they must immediately place it in a locked box. By doing so, you lessen the likelihood of getting hurt. Treatment and disposal options for medical waste

Use of Steam for Sanitizing Purposes

Sterilizing waste with steam is a common practise. It involves using a pressurised vessel called an autoclave filled with saturated steam hot enough to kill pathogenic microorganisms. Things that are contaminated should be sterilised for 30 minutes at 121oC and 106 kPa. The medical staff should take note that the clock won't start ticking until the device reaches the optimal temperature and pressure.

Incineration

Materials that can be burned in an incinerator are reduced to ash or other residues. The gases escape to the atmosphere via the chimney. The incinerator serves its purpose of destroying infectious microorganisms in the waste if it is constructed, maintained, and operated correctly. The term "incineration" refers to more than just burning when discussing waste management. It's a term for a very hot fire that has been carefully and methodically managed. In order to completely destroy needles and syringes, a waste incinerator needs to reach very high temperatures. Health Posts don't typically have access to high-temperature incinerators like the ones shown here, but there are still other burning options available. Community members can help the health workers construct a low-temperature incinerator, also known as a protected hearth.

If there is no access to a brick-built incinerator, health workers may be able to use a repurposed metal drum or barrel to incinerate the waste. The health care providers will need a metal drum with both ends cut off to create a cylinder-shaped container. Four bricks and two rigid metal screens big enough to cover the drum's open ends will also be required of the health workers. The drum must be placed in a secure area away from the Health Post structures, where the staff can easily access it. Distribute the bricks out on the ground in a grid pattern, and then set a metal grate over them. The drum's open base goes on the metal screen, and another screen goes on top. The metal screens serve two purposes: they allow air to flow around the garbage while it burns, increasing the fire's temperature, and they prevent ashes from flying out of the top. The drum can be used to dispose of the safety box or other trash by placing the contents inside along with some paper, dry leaves, or small sticks and a few drops of kerosene. The drum can be used as a makeshift fireplace by lighting a piece of paper under it and between the bricks, causing the flames to rise through the metal screen.

Burial Pits as a Method of Final Disposal

Some medical wastes can be buried, but ideally there would be two different burial pits, one for regular medical waste and one for the more dangerous types of medical waste. If there are community trash dumps, regular trash can be taken there. To keep people and animals out of hazardous waste burial pits, sturdy fencing is required. But in places where the groundwater level is too high, they shouldn't be used. Disposal pits for solid waste should have a bottom that is at least 1.5 m above ground level. The proper disposal of hazardous waste must be carried out in accordance with federal, state, and local laws.

Threats to Healthcare Workers and How to prevent and Manage Them Everyone in the healthcare industry, from waste collectors to maintenance staff, should be reminded to wear protective gear like gloves when handling potentially infectious materials and to wash their hands thoroughly afterward. Workers should exercise caution when handling all healthcare waste bags and containers because others may not have properly disposed of gloves, blades, or needles. Workers in healthcare facilities may sustain injuries on the job due to factors such as their haste to help patients, the severity of an emergency, their lack of training, or their inability to put their knowledge into practise.

Don't leave any sharp objects out on tables or counters. Needles and other sharps should only be discarded in puncture-resistant sharps containers, not trash cans or plastic bags. Needles should only be used once before being discarded. Examine the regulations regarding the safe disposal and collection of sharps and other potentially dangerous materials on a regular basis. Anyone working in healthcare must treat soiled linens and other similar items as potentially infectious waste and treat them accordingly. At least annually, staff should undergo refresher training on the unique dangers posed by healthcare waste. Workers should take necessary precautions to prevent further contamination from waste by using standard precautions for protecting themselves from contact with infectious wastes.

Conclusion

Simply put, healthcare waste includes everything from food scraps to sharps that ends up in a hospital or clinic. There are two types of garbage: hazardous and regular garbage. The most serious issue with Health Post trash is the potential for pathogens to spread disease. The first and foremost goal of healthcare waste management is waste minimization. Medical waste must be stored in containers that are clearly labelled with their respective categories and colours. A safety box is a vital piece of equipment for the secure disposal of sharps. Finally, a sharps pit is needed for disposal. In order to ensure the safety of those who will be responsible for the collection, transportation, and storage of medical waste, they should be educated on proper procedures and provided with appropriate protective gear.

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