

Review Article

ONE HEALTH APPROACH IN BIO-MEDICAL WASTE MANAGEMENT

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Abstract: Medical care is vital for our life and health, but the waste generated from medical activities represents a real problem of living nature, human health and animal health. These rise to the concern in disturbing the balance of one health and causes a direct health impact on the community, the animals and on the environment. Combined efforts of experts from these disciplines helps in eliminating relatively large amount of potentially infectious and hazardous waste those are generated in the health care hospitals and facilities around the world.

Keywords: One health, Biomedical Waste Management, Health care unit.

Introduction

Biomedical waste management has recently emerged as an issue of major concern not only to hospitals, nursing home authorities, and animal clinics but also to the environment. The biomedical wastes generated from health care units depend upon a number of factors such as waste management methods, type of health care units, occupancy of healthcare units, specialization of healthcare units, ratio of reusable items in use, availability of infrastructure and resources etc. The proper management of biomedical waste has become a worldwide humanitarian topic today. Although hazards of poor management of biomedical waste have aroused the concern world over, especially in the light of its far-reaching effects on human, health, animal health and the environment. One of India's major achievements has been to change the attitudes of the operators of health care facilities to incorporate good HCW management practices in their daily operations and to purchase on-site waste management services from the private sector. (Bekir Onursal, 2003).

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Definition

According to Biomedical Waste (Management and Handling) Rules, 1998 of India “Any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological. As per WHO norms the health-care waste includes all the waste generated by health-care establishments, research facilities, and laboratories. In addition, it includes the waste originating from minor or scattered sources such as that produced in the course of health care undertaken in the home (dialysis, insulin injections, etc.)

Classification and sources of bio-medical wastes

The World Health Organization (WHO) has classified medical waste into eight categories:

1. General Waste
2. Pathological
3. Radioactive
4. Chemical
5. Infectious to potentially infectious waste
6. Sharps
7. Pharmaceuticals
8. Pressurized containers

Sources of biomedical waste

Hospitals produce waste, which is increasing over the years in its amount and type. The hospital waste, in addition to the risk for patients and personnel who handle them also poses a threat to public health and environment.

Major Sources	Minor Sources
Govt. hospitals/private hospitals/nursing homes/dispensaries.	Physicians/ dentists’ clinics
Medical colleges and research centers/paramedical services.	Animal houses/slaughter houses.
Primary health centers.	Blood donation camps.
Veterinary colleges and animal research centers.	Vaccination centres.
Blood banks/mortuaries/autopsy centers.	Acupuncturists/psychiatric clinics/cosmetic piercing.
Biotechnology institutions.	Funeral services.
Production units.	Institutions for disabled persons

Problems relating to biomedical waste

A major issue related to current Bio-Medical waste management in many hospitals is that the implementation of Bio-Waste regulation is unsatisfactory as some hospitals are disposing of waste in a haphazard, improper and indiscriminate manner. Lack of segregation practices, hazardous. Inappropriate segregation ultimately results in an incorrect method of waste disposal.

Environmental Hazard

Inappropriate treatment and disposal of bio-medical waste contributes to environmental pollution, uncontrolled incineration causes air pollution, dumping in nallas, tanks and along the river bed causes water pollution and unscientific land filling cause's soil pollution.

Occupational Hazard

A risk to all those who generate, collect, segregate, handle, package, store, transport, treat and dispose bio-medical waste. Occupational exposure to blood can result from percutaneous injury (needle stick or other sharps injury), muco-cutaneous injury (splash of blood or other body fluids into the eyes, nose or mouth) or blood contact with non-intact skin. The most common form of occupational exposure to blood and the most likely to result in infection is needle stick injury. The most common cause of needle stick injury is two handed recapping and the unsafe collection and disposal of sharps waste. Over 20 blood borne diseases can be transmitted but particular concern is the threat of spread of infectious /communicable diseases like AIDS, Hepatitis B & C, Cholera, Tuberculosis, Diphtheria etc. Waste chemicals, radioactivity and heavy metals etc. are hazardous to health.

Public Health Hazard

Poor management of bio-medical waste can cause serious disease to health-care personnel, to waste workers, patients and to the general public. The greatest risk posed by infectious waste is accidental needle stick injuries, which can cause hepatitis B and hepatitis C and HIV infection. There are however numerous other diseases which could be transmitted by contact with infectious bio-medical wastes. During the handling of wastes, injuries occur when syringe, needles or other sharps have not been collected in puncture proof containers. Inappropriate design and / or overflow of existing sharps container and moreover unprotected pits increase risk exposure of the health care workers, waste handlers and of the community at large, to needle stick injuries. The reuse of infectious syringes represents a major threat to public health.

Role of different professionals in management of waste

Medical and paramedical professionals should form and follow a protocol through which wastes generated are disposed safely and properly without creating any hazardous dumping. They should classify the waste according to the degradation, infectivity and type and should follow proper steps in disposing the wastes. Should keep a day to day records on wastes generated in the particular clinic or hospital and the methods of disposing the waste. They form organizations such as IMAGE so that there will be frequent monitoring of clinics and hospitals in waste generation and disposal. In relation to public they should initiate regular awareness programmes about waste management after treatment and also about the serious public health issues due to improper disposal. After treatment each and every professional should advice patients and owners about disposal of wastes. Environmental professionals should regulate and monitor safe and reliable method of disposal of waste as environment can act as a source of disease outbreaks if not dispose properly. Should regulate and amend new rules and regulations regarding waste disposal.

Approach for hospital waste management

STEP 1 - Identification of areas of Bio-Medical Waste Generation

STEP II - Categorization and Quantification of Bio-Medical Waste

STEP III - Segregation, Handling and Storage

STEP IV- Treatment, Destruction and Disposal of Bio-Medical Waste

STEP V – Safety, Training and Management

Conclusion

Medical wastes should be classified according to their source, typology and risk factors associated with their handling, storage and ultimate disposal. The segregation of waste at source is the key step and reduction, reuse and recycling should be considered in proper perspectives. We need to consider innovative and radical measures to clean up the distressing picture of lack of civic concern on the part of hospitals and slackness in government implementation of bare minimum of rules, as waste generation particularly biomedical waste imposes increasing direct and indirect costs on society. The challenge before us, therefore, is to scientifically manage growing quantities of biomedical waste that go beyond past practices. If we want to protect our environment and health of community we must sensitize ourselves to this important issue not only in the interest of health managers but also in the interest of community.

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