

Knowledge and Practice of Bio Medical Waste Management in a Mortuary and Casualty of Tertiary Care Hospital

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Abstract

Bio Medical Waste management has been receiving highest priority in hospitals after the act was introduced by the Ministry of Environment and Forest, titled Bio Medical Waste Management and Handling Rules 1998. About 0.33 million tons of waste is generate per annum in India. Hospital acquired infections are on the rise due to improper waste management practice. A cross sectional, longitudinal study on Bio Medical waste management practice in a mortuary and casualty was conducted at a tertiary care teaching hospital from 1st July 2018 to 31st December 2018. The study focused on knowledge and practice of waste management in the casualty and mortuary. Interestingly, the practice of Bio Medical waste management was excellent in casualty and mortuary. Awareness of the hazards of improper waste management was poor among sanitary workers whereas doctors, nurses and other paramedical staff were well aware of the hazards.

Key words: Bio Medical waste management(BMW). Medical professionals. Mortuary. Casualty.

Introduction

Bio Medical waste is defined as waste generated in the hospital during diagnosis, immunisation, treatment and research activities^{1,3,4}. Infections acquired from the hospital are known as nosocomial infections. Millions of the patients are affected by health-care associated infections. In fact, WHO statistics reveal that for every 100 hospitalised patients at any given point of time², 7 in developed countries and 10 in developing countries will acquire nosocomial infections. WHO survey states that 8.7% of hospitalised patients suffered from hospital acquired infections. Similar to other developing countries, the magnitude of this problem is large in India².

Mortuary is one of the locations in a hospital, where large amount of Bio Medial waste is generated. Potential for transmission of infectious diseases like Tuberculosis,

diarrheal diseases, lung infections, Hepatitis, HIV and other communicable diseases increases due to improper medical waste management in the mortuary.

Health hazards due to infections in the mortuary not only affect the doctors and handlers of the bodies of the deceased, but also those in vicinity of the mortuary. Biomedical waste disposal practice is still primitive in mortuaries. Unfortunately, majority of the waste generated in mortuary is human anatomical waste which is very dangerous to the handlers.

Casualty is an emergency department; all types of waste is generated in this department, barring human anatomical waste. Most of the cases kept here for observation.

Most of the studies revealed that, lack of knowledge and awareness among the sanitary staff is the main reason for improper management of bio medical waste^{3,4}.

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Legal Aspects:

Bio Medical waste management and Handling rules 1998^{1,4}:

- Act means the Environment (Protection)

Act, 1986 (29 of 1986). Biomedical waste management and handling rules 1998.

- Authorization means permission granted by the prescribed authority.
- Authorized person means an occupier or operator authorized by the prescribed authority.
- Bio-medical waste means any waste, which is generated during diagnosis, treatment, immunization or in research activities.
- Bio-medical waste treatment facility means any facility wherein treatment and disposal of bio-medical waste is carried out.
- Occupier means a person who has control over that institution.
- Operator of a bio-medical waste disposal means a person who owns or operates a facility for the collection, storage, transport, treatment and disposal of bio-medical waste.
- **AUTHORISATION:** Every occupier of an institution handling bio-medical waste shall make an application in Form 1 to the prescribed authority for grant of authorization.
- **ADVISORY COMMITTEE:** The Government of every State/Union Territory shall constitute an advisory committee. The State Pollution Control Board shall be represented. The committee shall advise the Government about matters related to the implementation of these rules.
- **ANNUAL REPORT:** Every occupier/operator shall submit an annual report to the prescribed authority in Form 11 by 31 January every year.
- **MAINTENANCE OF RECORDS:** Every authorized person shall maintain records related to the generation, collection, reception, storage, transpiration, treatment and disposal of bio-medical waste in accordance with these rules and any guidelines issued.
- **ACCIDENT REPORTING:** Any accidental injury while handling the bio medical waste to be recorded and report immediately to the authority.

- As per the Bio-medical Waste management rules, it shall be the duty of every occupier of Health Care Facility & operator of Common Bio-Medical Waste Treatment Facility to take all the steps to ensure that the Bio-Medical waste is properly handled and disposed off without any adverse effect to human health and the environment.

Segregation, Storage and Disposal of Bio Medical waste^{1,5,6}:

Category Yellow: waste must be collected in Yellow colored non-chlorinated plastic bags. The following waste should be collected in yellow color bags.

(a) Human Anatomical Waste: Human tissues, organs, body parts and fetus below the viability period. yellow colored non-chlorinated plastic bag

(b) Animal Anatomical Waste: Experimental animal carcasses, body parts, organs, tissues, including the waste generated from animals used in experiments or testing in veterinary hospitals or colleges or animal houses.

(c) Soiled Waste: Items contaminated with blood, body fluids like dressings, plaster casts, cotton swabs and bags containing residual or discarded blood and blood components.

(d) Expired or Discarded Medicines: Pharmaceutical waste like antibiotics, cytotoxic drugs including all items contaminated with cytotoxic drugs along with glass or plastic ampoules, vials etc.

(e) Chemical Waste: Chemicals used in production of biological and used or discarded disinfectants.

(f) Discarded linen, mattresses, beddings contaminated with blood or body fluid.

(g) Microbiology, Biotechnology and other clinical laboratory waste: Blood bags, Laboratory cultures, stocks or specimens of microorganisms, live or attenuated vaccines, human and animal cell cultures used in research, dishes and devices used for cultures.

Waste collected in yellow color bag/bin should be treated by Incineration or Deep Burial.

Category Red: Red colored non-chlorinated plastic bags or containers must be used to collect waste. All plastic and rubber contaminated Waste (Recyclable)

Wastes generated from disposable items such as tubing, bottles, intravenous tubes, catheters, urine bags, syringes and gloves. This waste can be treated by autoclaving or microwaving followed by shredding and recycling.

White (Translucent) category: All sharp material including Metals: Needles, syringes with fixed needles, needles from needle tip cutter or burner, scalpels, blades or any other contaminated sharp object that may cause puncture and cuts, these waste can be treated by Autoclaving or Dry Heat Sterilization followed by shredding and dispose by concrete waste sharp pit.

Blue category: Glassware: Broken or discarded and contaminated glass including medicine vials and ampoules except those contaminated with cytotoxic wastes and metallic Body Implants to be segregated in blue color bags. These waste can be treated by Disinfection or autoclaving or microwaving and then sent for recycling.

The points to be noted are^{1,5,6}:

(1) Bio-medical waste shall not be mixed with other wastes.

(2) Bio-medical waste shall be segregated into containers/bags at the point of generation in according to their color codes.

(3) Biomedical waste shall be transported only in such vehicle which was authorized for the purpose by the competent authority as specified by the government.

(4) No untreated bio-medical waste shall be kept stored beyond a period of 48 hours.

(5) Instruments used in the mortuary during dissection can be reused after through washing and disinfecting with 1% sodium hypo chlorite solution.

Precautions for Handlers:

No one should handle Bio Medical waste with a bare hand, Handlers must wear gloves, head cap, mask, goggles and body apron. Every staff member must follow universal work precautions to protect from infections^{1,2,5,6}.

Punishment:

Whoever fails to comply with or contravenes any of the provisions of the act or rules made or directions issued there under, shall in respect of each such failure or

contravention shall be punishable with an imprisonment for a term up to Five years or with a fine up to one lakh rupees or both, (EPA Act 1986)^{1,4}.

Aim of the study:

The aim of this study is to assess practice of bio medical waste management in casualty and mortuary by doctors, nurses, technicians, and sanitary staff.

To identify any lacunae in the existing practice and guide the modifications deemed necessary

Materials and Method

A cross sectional study on biomedical waste management knowledge and practice in a mortuary and casualty was conducted at tertiary care teaching hospital in Ranga Reddy Dist. from 1st July 2018 to 31st December 2018, after receiving permission from the hospital authority. We observed the existing method of practice regarding collection, storage and disposal of biomedical waste in the mortuary and casualty.

We also assessed the knowledge of BMW management among medical professionals handling waste by administering the questionnaire. However, before administering the questionnaire, the purpose of the study was explained to all participating employees and their names were left anonymous.

The following observations were made regarding the practice of biomedical waste management:

1. Whether the bins were available as per the color-coding system and maintained.
2. Whether the bins were located in accessible locations in the department
3. Whether segregation of BMW was proper.
4. Availability of needle cutters
5. Whether disinfection solution was available
6. Any other specific observations

The information collected in to a data sheet for scientific evaluation.

Findings

Doctors, nurses, and technicians have better knowledge than sanitary staff regarding biomedical

waste management.

Knowledge regarding color-coding, waste segregation, transportation and disposal of waste was found to be better among doctors and nurses compared to sanitary staff.

Interestingly the Practice of waste collection, storage and transportation was excellent in casualty and mortuary even though the knowledge levels among sanitary workers were poor. All the storage bins with appropriate color and a symbol of bio medical waste were available in casualty and mortuary. The storage of the waste also found to be in accord with the existing guidelines. Needle cutters were available and in utilisation in casualty along with freshly prepared disinfecting solution. The storage bins were kept at proper accessible location in both mortuary and casualty.

Disposal facilities are not available in the institution, waste have been collected and disposed at common treatment facility.

All the staff members both casualty and mortuary were following universal safety precautions while handling biomedical waste. Staff was using a trolley for transportation of Bio Medical waste.

The amount of waste generated in casualty is high when compared to the mortuary. BMW in mortuary was very low in this institution due to lack of conduction of medico legal autopsies in the institution. Occasionally, however, pathological autopsies were conducted.

Conclusion

Bio medical waste management is an attitude and knowledge related programme. In majority of the studies we observed a lack of knowledge and awareness in sanitary staff is the main culprit for poor management of the programme. Though doctors and nurses are well trained but the practice is not up to the mark due to lack

of knowledge at low level sanitation staff. For effective implementation, periodical training programmes focusing on practical aspects should be conducted to all the staff and sanitation workers of the hospital. Best team work and effective supervision is very much essential for better implementation of the programme.

Conflict of Interest: Nil

source of the Funds: self

Ethical Clearance: Yes

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