

MODULE 04

Best Practices

The presentation will focus on:

- i) Best practices of bio-medical waste management at a healthcare facility: A case study

This session will familiarise the participants with a brief case study of best practices adopted by a healthcare facility as per the rules.

4.1 Case Study

4.1.1 Introduction:

Max Smart Healthcare Hospital is a leading multi-specialty hospital located in Press Enclave, Saket, New Delhi, India. As a responsible healthcare provider, Max is committed to maintaining the highest standards of bio-medical waste management, in compliance with the Bio-Medical Waste Management Rules, 2016. The hospital has implemented a comprehensive waste management system, encompassing proper handling, segregation, collection and storage, transportation, pre-treatment and finally treatment and disposal. Apart from compliance on technical grounds, there are several other factors the healthcare facility is effectively implementing, such as training of healthcare staff and waste workers, maintaining ideal temporary storage area, recording waste generation data, general cleanliness and housekeeping, developing and circulating IEC material, display of bio-medical waste posters in the corridors, pest control measures and forming infection control committee. The facility has appointed Biotic Waste Solution Pvt Ltd for collection of bio-medical waste from the common bio-medical waste storage area of the facility for further treatment and mitigating adverse impact on the workers of the facility as well as environment.

4.1.2 Sources of bio-medical waste generation:

The various sources of waste generation in the healthcare facility are-

- a. Emergency and Outpatient services
- b. Wards
- c. Routine examinations
- d. Intensive Care Unit (ICU)
- e. Neonatal Intensive Care Unit (NICU)
- f. Pediatric Intensive Care Unit (PICU)
- g. Labour
- h. Treatment

The above-mentioned units are the different areas of bio-medical waste generation that produce both hazardous and non-hazardous waste by carrying out antenatal and postnatal care, immunisation, routine patient care and treatment. Bio-medical wastes such as syringes and needles, cotton swabs, lancets and slides, ampoules, vials, blood and body fluids, broken glasses and gloves, liquid waste, placenta, soiled waste, chemotherapy waste from oncology, blades, masks, etc is segregated and collected from the units. To manage the waste generated a robust system of waste management is adopted at the centre, which is safe and for the healthcare workers and visitors. The waste management operation is easy to understand and operate and economically viable posing less or no adverse impact on health and the environment.



Bio-medical waste storage room for interim storage at Max healthcare

4.1.3 Steps adopted for bio-medical waste management; segregation, collection and storage, transportation and pre-treatment

Max Healthcare follows the key principle of segregation as the foundation of an efficient hospital waste management system. The hospital segregates waste into four categories as per schedule I of Bio-Medical Waste Management Rules, 2016 and Guidelines for Management of Healthcare Waste as per Biomedical Waste Management Rules, 2016 by CPCB and Ministry of Health and Family Welfare. The hospital has marked designated waste generation areas, and they have deployed trained and dedicated waste management staff to collect waste from these points. The collected waste is then stored in color-coded bags and bins and the intra mural transportation of waste is done on a daily basis in big colour-coded trolleys which are carried through areas with less human activity to avoid any potential health hazards. The waste is then stored in a common bio-medical waste storage area for not more than 48 hours. The waste is finally disposed of to a common biomedical waste treatment facility (CBWTF) called Biotic for disposal and treatment. Overall, the healthcare facility is committed to maintaining the highest standards of biomedical waste management to ensure the safety of both healthcare workers and the environment.



Training of healthcare staff and waste workers on bio-medical waste management

4.1.4 Other efforts towards compliance

A) Proper handling:

The facility has taken several initiatives to fulfil its duties towards effective bio-medical waste management. The hospital has designated a dedicated team i.e. Infection Control Committee to oversee and manage the entire bio-medical waste management process. This team ensures that all the staff, including healthcare workers and waste workers, are trained in proper handling techniques as per the guidelines provided by the Central Pollution Control Board.

B) Training of healthcare and waste workers staff:

The hospital conducts regular training sessions for its healthcare and waste workers staff on various aspects of bio-medical waste management such as reporting of major minor accidents, spill management, immunisation and so on. All healthcare workers and waste workers have received immunisation against Hepatitis B and Tetanus. This helps to prevent the spread of infections and ensures their safety while handling hazardous waste. This documentation is important for compliance, audits, and reporting to the authorities.

The staff directly dealing with bio-medical waste are inducted initially at the time of appointment on the same. These training programmes also include crucial sessions on waste segregation, handling, storage, transportation, and disposal. The staff is trained to follow colour-coded bags and containers as per the guidelines provided in the Bio-Medical Waste Management Rules, 2016. They are also educated about the potential hazards of improper waste management and the importance of adhering to the hospital's waste management protocols.

1. Spill management handling

For blood spill management:

Step 1: Wear PPE kit along with heavy duty gloves

Step 2: Surround the area with caution sign board

Step 3: Cover the spill area completely by absorbent tissue paper or used papers, let it absorb as much as liquid spill as possible

Step 4: Wipe the area with water and detergent until it is visibly clean

Step 5: For preparing 1 percent solution strength of disinfectant; use the process explained above

Step 6: Pour hypo-solution over the papers and let it sit for 30 minutes.

Step 7: Clear the area using a wiper and cloth

Step 8: Wash hands carefully with soap and water, and dry thoroughly with single-use towels.

Step 9: Record the incident in the incident book if a specimen was lost, or persons were exposed to blood and body fluids.



Liquid spill management in the healthcare facility

C) Maintaining Ideal Common Bio-Medical Storage Room:

The facility maintains a dedicated common bio-medical waste storage room, which is designed and equipped as per the BMW rules, 2016. The storage room is inspected for potential fire hazards, well-ventilated due to big exhaust fans, well-lit, and spacious enough to accommodate at least two days' quantum of waste in the colour-coded big bins. The central waste collection room is roofed and manned, and it is under the responsibility of a designated person who has the key to the room. It is equipped with charts, explainers, and banners that provide information on proper waste segregation, handling, and storage. The

room consist of explainers for autoclaving guide, labels for various colour-coded waste storage such as discarded medicines, cytotoxic waste, sharps container, bio-medical waste garbage bags, bar code sticker, CBWTF vehicle number, etc. The entrance of the room is also labelled as “Entry for Authorised Personnel Only” with the Bio-medical Waste Hazard logo. There is a separate water supply near the central waste storage area for cleaning and washing purposes, and the drainage from the storage and washing area is routed to the Effluent Treatment Plant. There is a separate drainage system for avoiding mixing of waste water into common waste water.

After the advent of Covid, the facility has further designated an area for covid metal sharps and covid waste storage with well labelled explainers displaying covid vehicle number to differentiate between covid and non-covid waste. Hypo is sprayed on regular intervals/daily over waste stored in common waste storage room. General waste is not stored in the central waste collection area, it has a separate room adjacent to bio-medical waste room. A record of waste generated and handed over to authorized recyclers and CBWTF is also maintained and kept in the storage room. Finally, to prevent pest infestations, Max Healthcare has appointed the services of a pest control agency to take regular measures in the central storage area. The storage room is regularly monitored by the waste management team to ensure that all waste is stored appropriately and as per the guidelines.

The occupier is also granted the authorisation by the Delhi Pollution Control Board for generation, segregation, collection, storage of bio-medical waste at the premises and for transportation, treatment and disposal of bio-medical waste through common bio-medical waste treatment facility.

D) Recording Waste Generation Data:

They record meticulous records of the bio-medical waste generated within the hospital premises. The waste is categorised and weighed using calibrated weighing scales, and the data is recorded in a designated waste management register under waste category. The register captures details such as the type of waste, colour-coded bags used, weight of waste generated, and the number of bags produced. This data is analysed periodically to monitor waste generation trends, identify areas of improvement, and ensure compliance with the waste management rules. A comprehensive monthly report is also generated and uploaded on their own portal and shared with CBWTF.

E) Packing, labelling and bar coding:

Certain criteria are met before handing over the waste to CBWTF. The packaging of biomedical waste is done to prevent leakage, odour and contamination. Non-chlorinated plastic bags are used for packaging of biomedical waste. These bags are sturdy and leak-proof to prevent any spillage or exposure. Barcoding and labelling of waste is carried out on a daily basis. Each waste bag or container is labelled with the appropriate colour-coded label additionally, a barcode should be affixed to each bag or container to enable proper tracking and identification of the waste.

F) IEC material on bio-medical waste management:

The facility is committed to proper bio-medical waste management, and the Information, Education, and Communication (IEC) materials produced by the organisation provide comprehensive guidance to staff and stakeholders on the safe handling, segregation, transportation, and disposal of bio-medical waste. The IEC materials are designed to raise awareness, educate, and empower healthcare workers, patients, and visitors to follow best practices in bio-medical waste management, including the use of colour-coded bins, proper labelling, and adherence to regulatory guidelines. The IEC material is produced in both Hindi and English language to gauge maximum attention. These IEC materials, including posters, pamphlets, videos, and training programmes, serve as valuable resources to promote compliance, minimise risks of infections, and protect the environment.

G) General housekeeping:

Proper cleaning and hygiene management are essential to prevent the spread of infections. Regular cleaning and disinfection of waste storage areas, disposal areas, and other relevant areas is carried out to maintain a clean and safe environment. A pest control authority is also appointed to inspect pests and infections prevailing in the facility. Pest control disinfectants are sprayed at frequent intervals to avoid contamination and the spread of diseases in the facility.

H) Infection control committee:

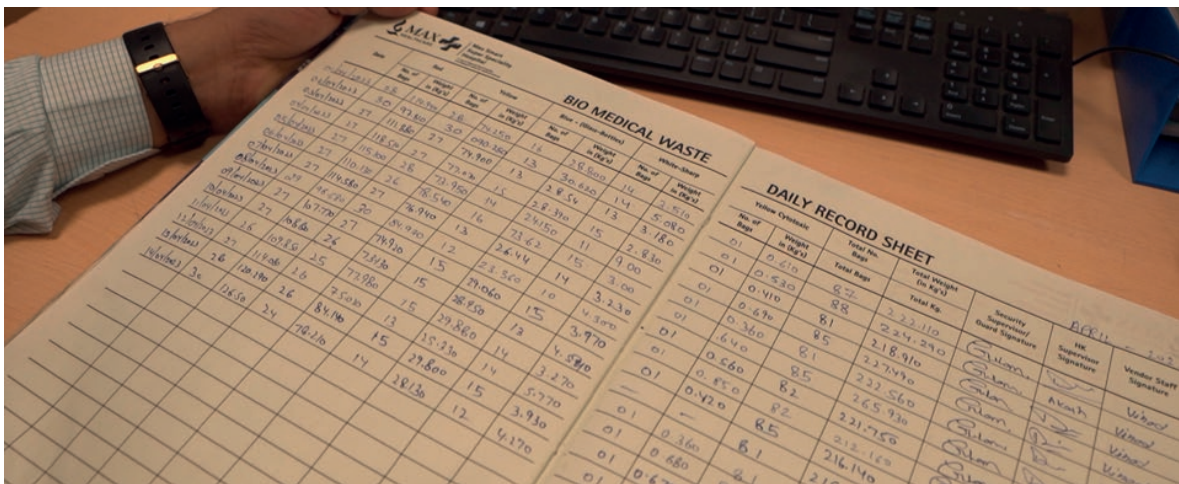
The Infection Control Committee at the facility plays a crucial role in ensuring the implementation of effective measures to prevent and control infections in healthcare settings, thereby safeguarding patient safety. Comprising of expert healthcare professionals, the committee monitors and evaluates infection control practices, reviews data on infection rates, conducts audits, and provides guidance on best practices, protocols, and policies to prevent and manage infections that may arise due to biomedical waste management. The Infection Control Committee's proactive approach in identifying and addressing infection risks, promoting education and training, and maintaining rigorous infection control standards contributes to maintaining a safe and healthy environment for patients, staff, and visitors at the facility.

4.1.5 Conclusion:

Max Smart Healthcare Hospital's efforts in bio-medical waste management are appreciable. The hospital has implemented robust systems and processes to ensure proper handling, training, storage, transportation, and disposal of bio-medical waste. The recording of waste generation data and periodic analysis of the same reflects the hospital's commitment to continuous improvement and compliance with the Bio-Medical Waste Management Rules, 2016. Max Smart Healthcare Hospital serves as a model for other healthcare facilities



Well-labelled bio-medical waste storage room



Record keeping and inventory of bio-medical waste



Needle stick injury reporting within the healthcare facility



Training of healthcare staff and waste workers on proper handling and reporting of accidents