Bio Medical Waste

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The 10 commandments of Bio-Medical Waste Management

A Step-by-Step Manual to setup a waste-management system in your hospital






The establishment of a fully-functional and effective waste-management system may seem as a daunting task, but if the management at the hospital is committed to the cause, the entire process can be achieved by means of a series of easy steps.

Let us take you through the 10 commandments of Bio-Medical Waste Management.

1. Waste Audit

A waste audit involves an extensive survey of a hospital's waste management framework. In order to fully achieve this, the authorities may visit all the wards in successive departments (to then weigh and analyse composition of waste) or deposit all the labeled waste bags at a central location to then analyze them. In case the waste has not been labelled/ segregated, it is advisable to employ protective equipment to first segregate the waste and then gauge the weight/volume of each singular waste stream.

One may gain significant insights into processes that need to be undertaken for waste reduction through frequent and regularized visits to pharmacies as well as discussions with end-users (doctors/nurses). These visits should be made with the objective of introducing slight alterations to consumption patterns. Areas such as over-packaging or high-wastage due to excessive procurement or ordering in quotas should be carefully surveyed.

A cautiously performed survey also assists in streamlining the waste management process and subsequently, determining policies related to the nature of procurement of infrastructure required for BMWM like - the size/number of the bins, bags, hub cutters; a schedule for waste-collection that includes intervals, routes, and finally, a site dedicated to storage.

The implementation of a waste management system must be preceded and followed by a waste survey. It is also crucial to keep the entire hospital staff updated and informed about the larger benefits of waste management; this can be achieved through regular meetings or conferences where the results of surveys and analyses are presented. This makes everyone a stakeholder in the practice of waste-management. Encouragement/Incentivisation may be a feature in the form of statistics that exhibit how proper waste management leads to a decrease in accidents related to waste disposal or demonstrate the decreased cost in the treatment of waste, revenue earned by selling recyclables, etc.

2. Waste Management Committee

BMW Amended Rules, 2011 state that any facility that is constituted by 30 beds (or more) must institute its own waste-management cell/unit, which will recruit individuals trained or equipped in the procedures that pertain to successful management of waste. The cell's course-of-action must then be discussed once every six months, with the important minutes that emerges from these meetings being included in the annual report.

It is advisable to appoint the head of the institute as the president of this cell/unit. Its constitution may also include senior representatives of the various departments and services (including nursing and sanitary departments) in the hospital. In a welcome change, most hospitals now deploy a specialist: an Infection Control Officer/ Quality and Safety Officer to address patient and staff safety issues.

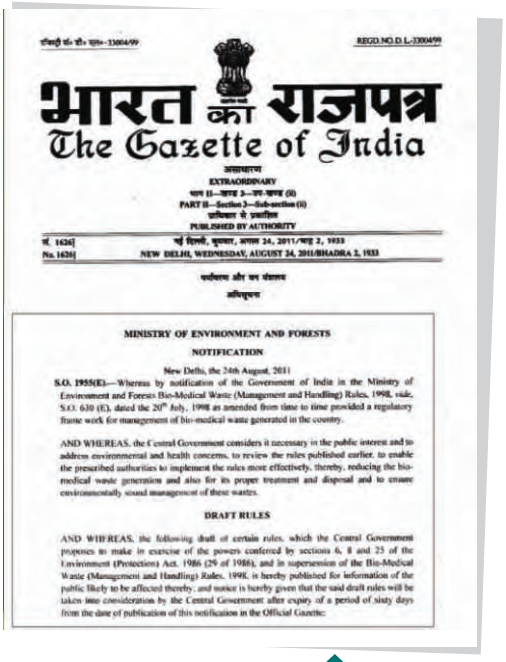
In 2002, Patient Safety was declared as a significant goal by The World Health Assembly. In view of this, a World Alliance for Patient safety was instituted in 2004. The first self-assigned challenge for the Alliance was 'clean care is safer care', which identified its focus on safe injection practices and waste management in healthcare.

3. Waste Management Policy

It is an extensive policy document that must detail and address all the significant facets of waste management in a hospital setting. It should be written clearly and in very precise terms and placed at several prominent locations across the hospital. This lessens the room for ambiguity and also initiates a process of consistent feedback and subsequent improvement.

A concise summary of this policy document should be shared with each personnel on the hospital roster, with particular focus on their role in the process. This will eliminate all room for doubt. Later, personnel must also be encouraged to use their individual experience in waste management to present feedback and help the policy evolve even further.

Occupational hazards in a hospital environment are



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MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 24th August, 2011

S.O. 1955(E).—Whereas by notification of the Government of India in the Ministry of Environment and Forests Bio-Medical Waste (Management and Handling) Rules, 1998, vide, S.O. 630 (E), dated the 20th July, 1998 as amended from time to time provided a regulatory frame work for management of bio-medical waste generated in the country.

AND WHEREAS, the Central Government considers it necessary in the public interest and to address environmental and health concerns, to review the rules published earlier, to enable the prescribed authorities to implement the rules more effectively, thereby, reducing the bio-medical waste generation and also for its proper treatment and disposal and to ensure environmentally sound management of these wastes.

DRAFT RULES

AND WHEREAS, the following draft of certain rules, which the Central Government proposes to make in exercise of the powers conferred by sections 6, 8 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), and in supersession of the Bio-Medical Waste (Management and Handling) Rules, 1998, is hereby published for information of the public likely to be affected thereby; and notice is hereby given that the said draft rules will be taken into consideration by the Central Government after expiry of a period of sixty days from the date of publication of this notification in the Official Gazette:

A. Setting up a Model Ward

Starting waste management in the entire hospital might be tasking and challenging, thus the concept of a Model Ward is helpful in a large set up where the cost, time and energy of establishing a waste management system is high. One ward or department in the hospital can be chosen and the staff of that ward area can be trained to set up a 'pilot' waste management system. Different kinds of equipment, bins, bags or any other material can be tested in this model ward and can then be selected for the entire hospital. This not only helps in having a demonstration site within the hospital for trainees, but also helps decide the best possible equipment through feedback from the staff. Thus, it makes good economic and training sense.

B. Special Cases

Operation theatres, ICUs and emergency wards usually handle sensitive cases within a hospital. These demand individualized attention. Hospital employees within these specialized zones need to be consulted in any discussion on waste management, so that their specific needs are considered and incorporated into the process of constructing an effective waste management system.

4. Segregation

The term segregation, in this context, refers to the dispatch of different types of waste to corresponding colour coded containers. Bio-medical Waste (Management and Handling) Rules, 1998 specifies ten categories of waste, the materials that constitute each of these categories, the prescribed colour codes for their respective containers and the treatment technology for each of them. Most of the waste commonly found in wards can be sorted into three categories. Segregation of waste must be performed at the location and at the exact time of its generation (there are categories of waste that are location specific). If this process is delayed or the waste is first transported to another location, mixing of separate categories of waste may occur. This will lead to the contamination of the entire waste stream and essentially defeat the purpose of segregation.

The process of segregation curbs the spread of infection and prevents occupational hazards (since it encourages specialist waste-handlers who are equipped with proper training and gear). It also helps the hospital manage its investment in the entire waste-management scheme, since 80 (majority) per cent of a hospital's waste is general waste (once properly segregated from infectious waste) and does not necessitate application of special designated treatment. Conversely, this also helps the hospital reclaim revenue from selling objects and material located within the debris of the general waste.

MEANS TO EFFECTIVE SEGREGATION

Posters, brochures and other printed material must be placed strategically across the hospital to continuously remind the staff of their responsibilities as waste managers and towards segregation in general.

HOW TO ACHIEVE OPTIMAL SEGREGATION

Effective design as well as colour coding can lead to effective usability and high-levels of utility. Accessibility is essential too; several cases have been cited where proper use of a disposal stream was hindered due to indifferent location/positioning. Decisions regarding bins (number, placement, colours etc.) should always involve the opinion of personnel who will use them. Furthermore, sufficient units of each type of bin must be made available. It is also contingent on the authorities to educate their staff to maintain the cleanliness of the bins or to keep them foot-pressed at all times. This will, in turn, eliminate all hesitation to approach a bin due to trivial reasons such as a sinister appearance.

5. Collection

Waste management does not stop at segregation – it only begins with it.

A training mechanism to initiate housekeeping staff in proper methods of collection and transportation of waste must be instituted. This will help minimise the overall risk of exposure. Furthermore, they should be warned against inadvertent mixing, spillage or mishandling of waste. This intimation must also include details of contingency measures in case of accidents/spills and corresponding methods by which to report these.

Specialization as an approach must be encouraged; this means training different individuals in handling different waste-units. This will also lead to collateral benefits by creating a system that encourages accountability (by making a person or a group of persons responsible) and subsequently, safety. A meticulous schedule should also be carved to determine different collection times for different waste-streams. This approach helps reduces chances of mixing and avoid unnecessary wastage of carrier-bags (for example, general waste needs to be collected frequently, while the other types do not).

The time of collection requires significant study and supervision as well. In hospitals, mornings generally begin with dressings and related activities, therefore the yellow bags meant for such waste are filled up in the morning shift. Thus, one can determine noon as an optimal time for the collection of such waste. A similar time-based strategy must be adopted for different streams of waste. Closed containers not only offer an aesthetic advantage, but are also much safer in cases of accidents (to minimise spillage).

6. Storage

Storage time is the time lag between the generation of waste and its treatment. Storage could be of different kinds: storage of waste within the hospital's wards/departments; storage outside wards but within the hospital premises; if the waste is taken to a treatment site, then storage in a vehicle; and finally storage at the central facility. According to the Indian rules, waste should not be kept untreated for more than 48 hours. One must remember that this is the maximum time limit. Keeping the Indian climate in mind (the hot and humid conditions in most parts of the country)it is advisable to treat waste as soon as possible. According to WHO, unless a refrigerated storage room is available, storage times for healthcare waste (i.e. the delay between production and treatment) should not exceed the following- Temperate climate: 72 hours in winter; 48 hours in summer. Warm climate: 48 hours during the cool season; 24 hours during the hot season Storage within the hospital should be done in labeled, colour-coded bins and bags in secured, balanced, easily washable containers that do not have any sharp edges. The main storage site of the hospital should be accessible to vehicles so that the collection vans can reach it. This reduces the number of personnel handling the waste. The storage site should have a smooth surface so that it can be washed easily in case of spills. The hospital should ensure that there are written instructions to handle spills, and that the personnel at the storage site are trained for such work. This place should be inaccessible to any unauthorized person. It should be lockable and washable.

7. Monitoring

Monitoring is very essential in the early stages of the system as it helps establish it and subsequent monitoring helps in its upkeep. Monitoring would involve inspecting segregation, disinfection and mutilation of waste in the wards, use of protective gear, route and means of transportation, final treatment and disposal of waste, etc.

Monitoring should be done in a layered manner. Primary monitoring can be done by the nurse incharge of the ward during her morning rounds. Her daily reporting formats should include waste management. The nursing superintendent can make occasional rounds and report to the medical superintendent and the director, one of whom can be the head of the waste management committee. These people in turn can take occasional rounds and encourage the staff following good waste management practices in their wards.

Monitoring would highlight area-specific problems which can be discussed, and sorted out, with concerned personnel. It is important to conduct routine Waste Audits to be able to spot any increase in infectious waste or fluctuations in waste generation. These changes could be evaluated by the hospital administration.

8. Training hospital staff

Training and creating awareness amongst the hospital staff is the key to having a good waste management system. It not only apprises them of the existing problems and the need of managing waste but also orients them to a practical system. Training can be done in a particular ward initially where a model system could be established. This ward/ department can be used in further training sessions as a practical model for trainees. Training should be done in easy to understand language. It should be a mix of discussion, teaching, interaction, role play etc.

Ward boys trainings can be made interesting and effective through skits, street plays etc. The nurses on the other hand can be encouraged to read more about waste management by holding poster competitions, play competitions or debates on the implications of good and bad waste management.

Ongoing training is very important because a hospital's staff turnover rate is generally very high. Moreover, the subject may loose its importance over a period of time. It is important thus to keep reminding the staff about waste management issues till the concepts are engrained into the system.

9. Waste Treatment Handling & Disposal

The facility for the treatment of accumulated and segregated waste can be onsite and offsite. Onsite treatment will include disinfection with suitable agents like sodium hypochlorite solution or bleaching solution or by means of autoclaving. Disinfection can be further followed by mutilation or shredding in order to avoid illegal reuse. The disinfected plastic waste then can be sent to the approved recyclers. Human anatomical and animal waste, microbiology & biotechnology laboratory waste, blood contaminated waste, discarded medicines and cytotoxic waste etc. are sent for incineration/deep burial (only in rural areas).

The hospital should make use of an offsite facility for the incineration of bio medical waste.

10. Economics of Waste Management

Needless to say, the economical aspect of waste-management is essential for discussion. The history is evidence however, that for most hospitals, a waste-management system and specialist training for its staff have proven to be wise investments in the long-term. This accounts not only for principal or aesthetic gain, but also for the economic yield in the process. For instance, segregation of general waste from industrial waste creates a potential to earn revenue by selling recyclable elements (bio-medical waste plastics, other plastics, etc.) within this stream of waste. Kitchen waste, too, can be composted for the nourishment of the hospital garden or utilized in bio-methanation plants that help generate energy. Effective and controlled use of disinfectants and pesticide is also crucial. This helps the hospital optimize utilization and curb spending on unneeded or over-expensive chemicals and disinfectants. Moreover, a scientific, well-planned use of bins and bags, a tab on the waste generated and a keen check on the level of segregation will all reflect on the hospital's turnover in the long term.

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- BMW Implementation Cost Calculator
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