

# Legacy we will leave behind....Bio-Medical Wastes

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**Abstract:** Bio-medical waste is of great concern, as it can cause injury potential for disease transmission and environmental pollution. It is no longer limited to Health care. Without segregating & disinfecting it is either burnt contributing to environmental pollution by the release of toxic air emissions or stuffed in the main holes of the footpath. Some even dump the wastes in the drain/river at night hours so that nobody notices it. The loosely packed dumped wastes get mixed with GMC wastes, pose threat to the children or other household members who come in contact with the infected wastes especially the sharps. It also puts the health of the municipal waste worker, rag pickers and unsuspecting public at a high risk, whether they afford for treatment or succumbs to it we are hardly aware of. The sharp items cause cut in the skin which leads to entry of dirt and pathogens through the non-intact skin predisposing to infections such as tetanus and other diseases such as HIV, Hepatitis B & C etc. <sup>[2]</sup> Aggressive awareness/ Public education on the consequences of improper management of infected biomedical waste is the necessity of the hour. All bio-medical wastes are not infected wastes but due to lack of awareness the infected wastes get mixed with non-infected wastes and thus whole wastes gets infected causing serious concern<sup>[3]</sup> Awareness among the generators of infected waste will make them more responsible and accountable. A framework needs to be made for proper disposal of household bio-medical wastes.

**Key Words:** Bio-medical wastes, General wastes, Infected bio-medical wastes, Home Care Service, Household medical wastes, Healthcare wastes.

## 1. INTRODUCTION:

Today Waste Management has become the hot topic of discussion for every town. Often newspapers, Journals, Print & Media highlight the artificial flood caused due to few minutes of shower. The drains are often found to be blocked with plastic bottles, gloves, sharps, used gauze, discarded cotton, filthy smell everywhere, inviting scavengers and death of aquatic animals. This occurs due to lack of proper waste management system. We grumble, blame each other, blame the authority as well and cover the nose with handkerchief and cross the area dumped garbage area, after reaching home we forget & get ourselves busy in our day-to-day activities. We hardly recognise that most of our day-to-day activities generate wastes. We never seriously think on the topic nor do we analyse because we don't want to WASTE our time on discussing "WASTE".



## 2. DISCUSSION:

Waste Management can be defined as the collection, transportation & disposal of garbage, sewage and other waste products. The process of waste management involves treating solid and liquid waste. During the treatment, it also offers a variety of solutions for recycling items that aren't categorised as trash.

Guidelines for Management of Healthcare Waste as per Bio-medical Waste Management Rules, 2016 defines the process of waste management for the waste generated from the healthcare organisations and also the camps undertaken in outreach areas. There are various categories of wastes. As mentioned in BMW guidelines 2016, general



waste consists of all the waste other than bio-medical waste and which has not been in contact with any hazardous or infectious, chemical or biological secretions and does not include any waste sharps. These wastes include newspapers, card boxes, plastic water bottles, aluminium cans of soft drinks, packaging materials, food containers after emptying residual food, organic/bio-degradable wastes-mostly food waste, construction and demolition wastes. For household wastes blue and green bins have been recommended but hardly we abide, we mix both the category of wastes and put them in either of the bins or accumulate the wastes in polythene bags and throw in the drains.

The mentioned wastes need to be handled as per Solid Waste Management Rules, 2016 and Construction & Demolition Waste Management Rules, 2016, as applicable. Other wastes consist of used electronic wastes, used batteries, and radio-active wastes which are not covered under biomedical wastes but have to be disposed as and when such wastes are generated as per the provisions laid down under E-Waste (Management) Rules, 2016, Batteries (Management & Handling) Rules, 2001, and Rules/guidelines under Atomic Energy Act, 1962 respectively. It excludes the infected bio-medical wastes generated other than healthcare sectors.<sup>[4]</sup>

### 3. ANALYSIS:

The paradigm of health service is changing and hence the source of generation. The post COVID era has accelerated the concept of Home Care Service. The post discharge patients, discharged on request patients, post covid sick bed ridden patients need home care. With Home Care Service the patients are able to avail the services of doctors, nurses, physiotherapists, pathological testing, at the door step itself with just a call. Multidimensional home care services are being provided to the patients of all ages. With the state of art technology procedures, robotic surgeries, introduction of higher antibiotics focus lies on minimum length of stay of the patient in the hospital. Early ambulation and early discharge of patients from the hospitals even for the operative cases such as gall bladder, breast cancer, knee replacement etc. is the quality indicator of every healthcare. Post discharge advice often includes intake of higher antibiotics, injectables, dressing of surgery wound at home for fast recovery is facilitated by Home Care Service. It is a cost-effective way for the patients to avail the quality patient care service, away from the hassle of the hospitals.<sup>[1,2]</sup> Treatment of short-term ailments like tuberculosis, diarrhoea, acute respiratory tract infections etc are provided at homes itself under the supervision of family Physicians. Most of the hospitals, nursing homes have stepped into this Home Care Service. Some of the doctors doing private practices have started home care services as well.

When we google the fastest spreading disease, we find is Diabetes. As per WHO around 422 million people worldwide have diabetes. India ranks 2nd worldwide. We can imagine the no. of patients taking insulin and the use of insulin pens as well.<sup>[1]</sup>

The medical waste generated at households due to domiciliary treatment is called Household bio-medical waste. The wastes includes stained gauze, cotton, discarded dressing materials, used syringes, discarded insulin pens, used IV sets, used IV bottles, used drip sets, discarded first aid items, discarded medicines left over from previous use expired medicines, discarded vials, discarded ampules, frequently used gloves, disposable masks, used urine bags, discarded catheters, used blades, used needles, discarded lancets, used condoms, used pregnancy kits, blood sugar test strips, X-ray films, used sanitary pads, adult/baby diapers etc. most of the wastes generated from healthcare are generated at household also. It is observed that neither there are any guidelines nor made anybody responsible for collection and disposal of infected biomedical wastes generated from the Home Care Services.<sup>[1,2]</sup>

Mushrooming of Chemist Shops/Pharmacies along road side, bye lanes is clearly visible. It is often observed that the Pharmacy personnel provide IV/IM/Immunization services to the patients. First aid service, dressings are also performed for cut injuries, accidental cases. The Pharmacies also generate infected bio-medical wastes as it acts as mini dispensary. These chemist shops/ pharmacies also fail to abide by any norms.

### 4. FINDINGS:

The bio-medical wastes are of great concern, as it can cause injury potential for disease transmission and environmental pollution. It is no longer limited to Health care. Without ségrégating & disinfecting it is either burnt contributing to environmental pollution by the release of toxic air emissions or stuffed in the main holes of the foot path. Some even dump the wastes in the drain/river at night hours so that no body notices it. The loosely packed dumped wastes get mixed with GMC wastes, pose threat to the children or other house hold members who come in contact with the infected wastes especially the sharps. Ignoring household bio-medical waste in the new Bio-medical Management rules of 2016 has left a gaping hole in addressing this already-neglected paradigm in public health.<sup>[2]</sup> It also puts the health of the municipal waste worker, ragpickers, unsuspecting public at a highrisk, whether they affords for treatment or succumbs to it we are hardly aware of. The sharp items cause cut in the skin which leads to entry of dirt and pathogens through the non-intact skin predisposing to infections such as tetanus and other diseases such as HIV, Hepatitis B & C etc.<sup>[2]</sup>



The rate at which we are generating waste on day-to-day basis is alarming. Managing the Healthcare BMW waste is just the tip of the ice berg. Many people lost their life due to the recent man made and natural disasters in the country as well as outside. The geographical location of our state makes it earth quake prone.

The increase rate of pollution is accelerating the increase in the number of asthma cases leading to respiratory distress diseases in children as well as adults shows the quality of the air we inhale. After havoc of Covid 19, another variant is already knocking at ourdoor.

Aggressive awareness/ Public education on the consequences of improper management of infected biomedical waste is the necessity of the hour. All bio-medical wastes are not infected wastes but due to lack of awareness the infected wastes gets mixed up with non infected wastes and thus whole wastes gets infected causing serious concern.

Hence for better implementation the management of bio-medical wastes can be included in the syllabus of school & college students. Children are taught about hand hygiene, wet and dry wastes in the primary classes similarly awareness on bio-medical wastes its segregation, safe handling can be included. Awareness among the generators of infected waste will make them more responsible and accountable.[1,2] A framework needs to be made for proper disposal of bio-medical wastes. The concerned authority, the healthcare leaders who are leaving no stone unturned in providing Delighted Quality Patient Care Service should hand hold public in this matter. Awareness among people on different levels such as community level, district level etc for the sake of the noble cause will definitely work.

If we list the top 10 cleanest cities in India, it would be Indore, as a result of deliberate waste sorting, recycling, and disposal efforts, Indore has become India's tidiest city in 2022. Next is Surat, Navi Mumbai, Visakhapatnam, Vijayawada, Bhopal, Tirupati, Mysore, New Delhi, Ambikapur. Northeast is also not lagging behind. Few villages like Rangapara of Goalpara District, Assam & Mawlynong of Shillong have already set examples in cleanliness. It is evident that if we strive for cleanliness we can do it as well. Every individual who wants to live and let live their coming generations will definitely abide by it. Some stringent steps as per requirement might help in marching ahead.

#### 5. Steps for managing Bio-Medical Waste generated at households :-

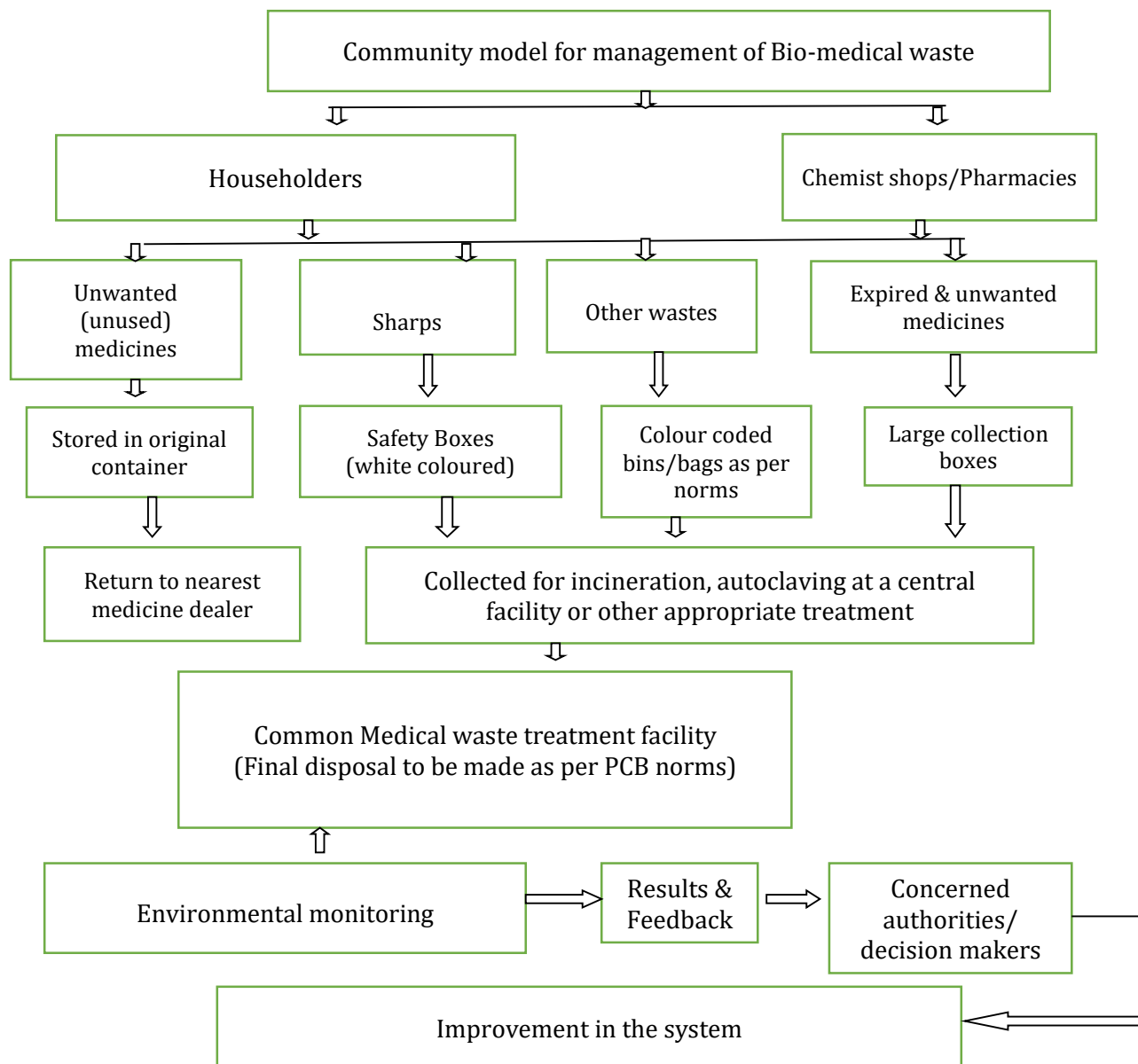
- Surveys can be conducted identifying and listing the bio medical waste items commonly generated from households.
- Assess the approximate quantity of bio-medical wastes (categorywise) generated from the households.
- Finalisation of the commonly bio-medical waste for facilitating segregation at the point of source.
- After finalisation of the segregated categories treatment and disposal of wastes can be done with the options available for treatment.
- As per existing norms of bio-medical waste management colour code container/ bags can be provided.
- Containment of household medical wastes can be done and transportation can be done in closed vehicles as per existing norms from point of generation to common waste collection point.
- Arrangement of Common Bio-Medical Waste Treatment Facility in co-ordination with Pollution Control Board.
- A pilot project can be undertaken before finalisation of the system for safe management bio-medical waste management of households.
- Undertake and plan on information dissemination activity about the system.

#### 6. RECOMMENDATIONS:

- Puncture proof mini-safety white coloured boxes can be made available in the Chemist shops/Pharmacies at subsidized rate. It can be made mandatory for households during purchase of sharps. [2]
- In case of Home Care Services being provided to patients by the nursing homes, hospitals, private practicing doctors the responsibility can be provided to the service providers to collect and dispose the wastes as per norms. [2]
- For community acquired needle stick injury surveillance and primary care emergency hotlines can be made available. This will facilitate the communication between the infected and experts at different levels. Accordingly, prophylaxis management, referrals can be made. [1,2]
- It has also been observed that most of the females use sanitary pads during their menstrual cycle which is one of the major part of bio-medical wastes. Hence eco-friendly sanitary pads should be encouraged to be used. Smart techniques should be used to decrease the waste generation.



### 7. Hypothetical Model for Community Management of Bio-medical Waste of Households, Chemist Shops [2]



### 8. CONCLUSION:

It can be concluded that Management of Infected Bio-medical waste generated from households, Chemist shops/Pharmacies is the need of the hour. Policy needs to be framed. Aggressive awareness is required among people, households, chemist shops. It has been observed that due to ignorance the non-infected bio-medical wastes gets mixed with infected wastes leading to numerous public health hazards. People, Policy, Planet needs to be brought on the same platform for the management of wastes. Let's think of the legacy we will leave behind i.e dump of hazardous bio-medical wastes with no place to play for children, luxury flats, branded cars, cash in the lockers, bank balance, debit cards, credit cards or a disease-free land to play, fresh water to drink, fresh air to breathe. different seasons to enjoy i.e summer, winter, spring, autumn, Flora and Fauna, a beautiful earth which words would fail to express. It's time that we take right step before it's too late or else the coming generation will never forgive us for the legacy, we will leave behind....





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#### AUTHOR'S BIOGRAPHY



I, Mrs. Kamala Singh Das have been associated with health care industry from last 23years. I am a science graduate with Post graduate diploma holder, specialised in Marketing and Human Resource Management. Currently pursuing Master of Business Administration in Hospital Management. I am working as Deputy General Manager at Marwari Hospitals, Guwahati, Assam. I have been handling day to day operational activities. Have also guided Internship Project for students pursuing MBA course in Hospital Management from Assam Down Town University in the year 2019. Has also undertaken course on GOOD CLINICAL PRACTICE conducted by NIDA Clinical Trials Network. I have keen interest in study & research activities related to healthcare and I hope my study will be beneficial in the field of Health Science.

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