

Process of Bio Medical Waste Management

Dr. J. Prerana

Third Year PG

Department of

Hospital Administration

Introduction

- Hospitals and other healthcare establishments have a “duty of care”
- Negligence contributes to polluting the environment and affects the health of human beings.
- The waste generated by any hospital / health care facilities consists of general waste, hazardous and infectious waste.

Magnitude of the problem

- Globally: developed countries generate 1 to 5 kg/bed/day
- Developing countries: meagre data, but figures are lower. 1-2 kg/bed/day
- WHO Report: 85% non hazardous waste
 - 10% infectious waste
 - 5% non infectious but hazardous
(chemical, pharmaceutical and radioactive)
- India: no national level study
 - Local or regional study shows hospitals generate roughly 1-2 kg/bed/day

Bio Medical waste - Definition

- As per Bio-Medical Waste (Management and Handling) Rules, 1998 and amendments, any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining there to or in the production of testing of biological and including categories mentioned in schedule 1 of the Rule, is the bio-medical waste.

Contd..

- As per WHO norms the health-care waste includes all the waste generated by healthcare 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.).

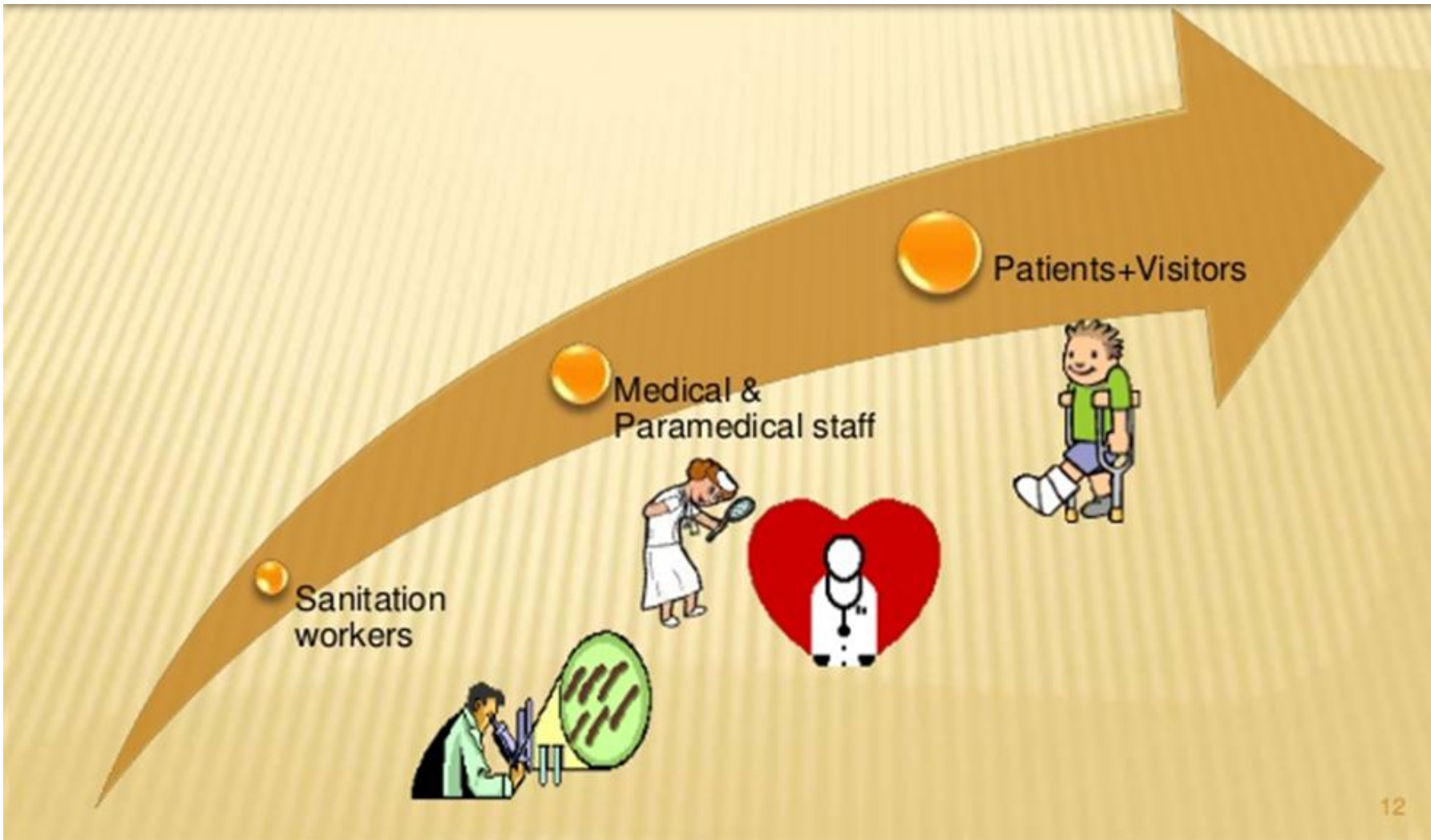
Types of Bio Medical Waste

- Infectious waste
- Pathological waste
- Sharps
- Pharmaceutical waste
- Genotoxic waste
- Chemical Waste
- Waste with high content of heavy metals
- Pressurized containers: Gas cylinders; gas cartridges; aerosol cans
- Radioactive waste

Sources of Health Care Waste

- Government hospitals
- Private hospitals
- Nursing homes
- Physician's office/clinics
- Dentist's office/clinics
- Dispensaries
- Primary health centres
- Medical research and training establishments
- Mortuaries
- Blood banks and collection centres
- Animal houses
- Laboratories
- Research organizations
- Vaccinating centres
- Bio-technology institutions

Categories of persons exposed to risk of infection



Dangers of improper management of Bio-Medical Waste

- The infectious waste, if not segregated turns general waste to infectious waste.
- Vectors born disease increase.
- Needle stick injuries.
- Circulation of needles and syringes
- Epidemics and increased incidence of communicable diseases in the community.

Planning and designing of Bio Medical Waste management

- How much and what type of waste is generated and from which unit.
- Is waste minimization possible
- What type of disposal methodology is to be adopted
- Forming a bio medical waste management committee

Items and Equipment Required for Bio-Medical Waste Management

- Protective aids like gloves, boots, over garment, etc.
- Coloured bins and bags
- Trolley
- Temporary central storage room
- Needle cutter
- Sodium hypochlorite solution
- Waste water treatment plant

Protective aids



Mask



Cap



Gloves



Boots or closed-toe Shoes



Over garment / Apron

Waste segregation bags and bins



Weighing machine & Needle cutter

Weighing Machine



Needle Cutter



Dedicated trolley & Disinfection solution

Dedicated Trolley



Scissors and Disinfection Solution

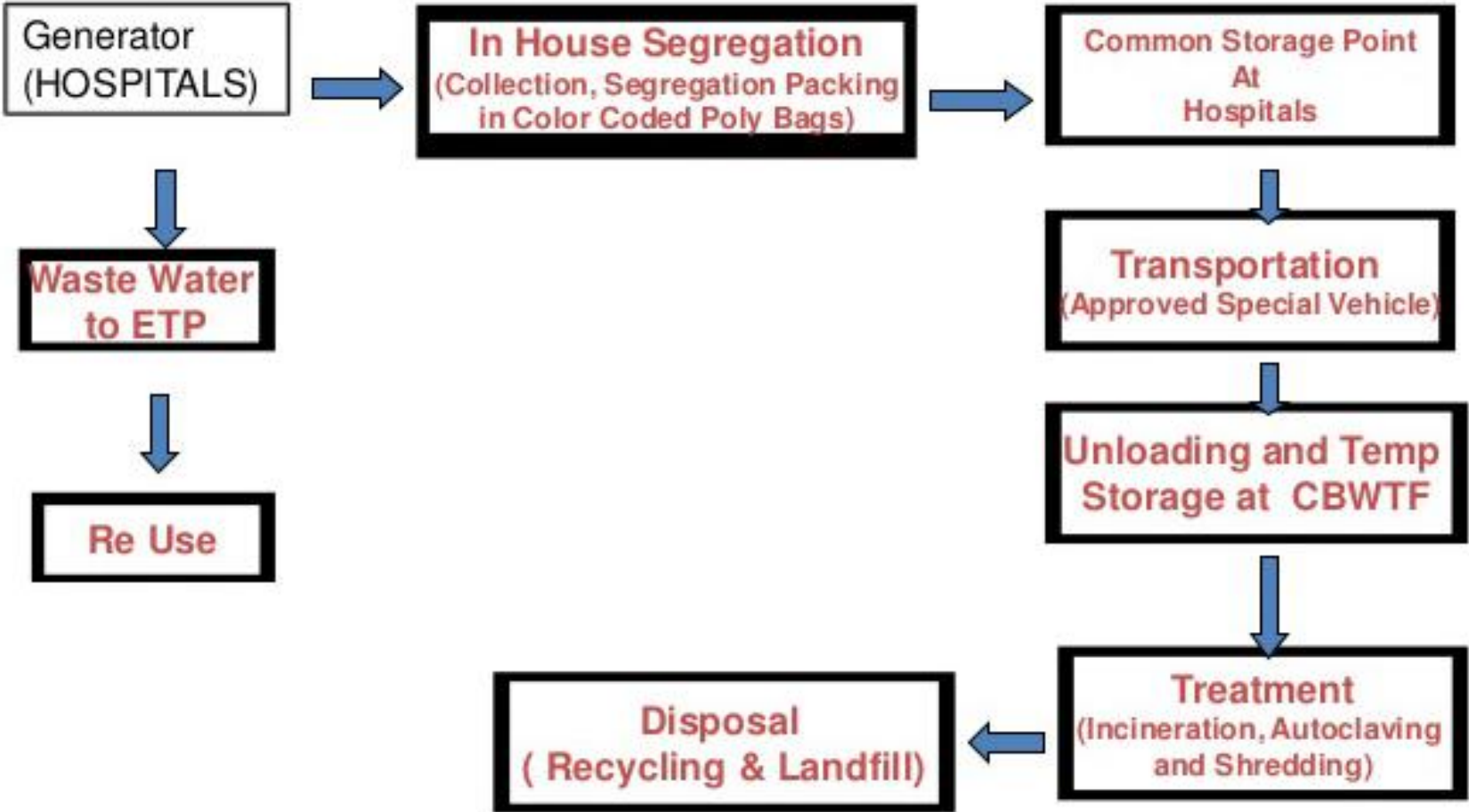


Temporary central storage room

Temporary Central Storage Room



Bio Medical Waste Flow Chart



Segregation of waste

- At the point of generation
- In a colour coded leak-proof container
- Container should bear 'Biohazard' symbol
- Container should never be completely filled

Segregation of Bio Medical Waste



Packaging and labelling

- Bags 3/4th filled should be tied
- Date of Packaging
- Weighing & Recording
- Separate Register and Weighing Machine
- Daily recording is mandatory

Label for transport of bio medical waste containers/ bag

- Date of generation
- Waste category No
- Waste description.....
- Sender's Name & Address..... Contact Person.....
- Receiver's Name & Address..... Contact Person.....
- In case of emergency please contact, Name & address.....

Label shall be non-washable and prominently visible.

Transportation

- Internal :

Designated hand cart wheeled trolley

- External:

Registered, authorised biomedical waste transporters

Disposal methods

- Incineration
- Chemical disinfection
- Autoclave
- Microwave
- Shredder
- Plasma pyrolysis
- Deep burial

Accidental spillage in hospitals

- Evacuate the contaminated area.
- Decontaminate the eyes and skin of exposed personnel immediately.
- Inform the designated person.
- Determine the nature of the spill.
- Provide first aid and medical care to injured individuals.
- Secure the area.
- Provide adequate protective clothing to personnel involved in cleaning-up.

Contd..

- Limit the spread of the spill.
- Neutralize or disinfect the spilled or contaminated material if indicated.
- Collect all spilled and contaminated material.
- Decontaminate or disinfect the area, wiping up with absorbent cloth.
- Rinse the area, and wipe dry with absorbent cloths.
- Decontaminate or disinfect any tools that were used.
- Seek medical attention if exposure to hazardous material has occurred during the operation.

Spillage of mercury

- Evacuate the contaminated area.
- Keep the heat below 20°C and ventilate the area if possible.
- Put on face mask in order to prevent breathing of mercury vapour.
- Remove all jewellery from hands and wrists.
- Appropriate personal protective equipment should be used

Contd..

- Cardboard sheets should be used to push the spilled beads of mercury together.
- Mercury should be placed carefully in a container with some water.
- Never use a broom or a vacuum cleaner.
- It should not be swept down the drain and wherever possible, it should be disposed off at a hazardous waste facility or given to a mercury-based equipment manufacture.

WHO recommended steps after a needle stick injury

- Wounds and skin sites exposed to should be washed with soap and water; and mucous membranes flushed with water.
- If blood or body fluids have gotten into eyes, splash eyes with clean water.
- Immediately report the incident to a designated person or head nurse.
- Retain, if possible, the item involved in the incident, get details of its source for identification of possible infection.

Contd..

- Seek additional medical attention in an emergency health department as soon as infection identified (based on body substance and severity of exposure).
- Get blood tests or other tests and counselling, if indicated.
- Record the incident.
- Investigate the incident and identify and implement remedial action to prevent similar incidents in the future.

Do's & Don'ts

Do's

- Generate waste when it is essential.
- Segregate it as soon as it is generated
- Collect it in specific colour coded covered bins having bio hazard logo
- Destroy needle by using needle cutter or needle burner.
- Keep the needles in puncture proof, translucent container having 1% sodium hypochlorite solution

Contd..

- Clean and disinfect the bins regularly
- Carry / transport the waste in closed containers.
- Use dedicated waste collection bins / trolleys for transporting waste.
- Transport waste through a pre- defined route within the Hospital.
- All liquid chemical waste should be drained out in to drains only after chemical treatment.

Don'ts

- Never mix infectious and non- infectious waste
- Never overfill the bins.
- Never store waste beyond 48 hrs.
- There should not be any spillage on the way of transport.
- Avoid transport of waste through crowded areas.
- Do not throw infectious waste into general waste without any pre-treatment and mutilation.

THANK YOU