BIOMEDICAL WASTE MANAGEMENT

TEXT MATERIAL

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| Sr. No. | Specific objective | Time | Content | Teaching learning activity | A.V. Aid |
|  |  | 2 min. | IntroductionHospital produces many types of waste material. Many of the hospitals neither have a satisfactory waste disposal system nor a waste management and disposal policy.Management of biomedical waste generated in hospital in a safe and effective manner is a legal obligation and a social responsibility.To generate awareness among all concerned with the production and disposal a biomedical waste regarding the proper and effective way of dealing with biomedical waste. | Teacher introduces the topic through the lecture cum discussion |  |
| 1 | Biomedical waste handlers will be able to define biomedical waste | 2 min | Health care facilities are the temples of maintaining | Investigator explains the Definition of biomedical wasteWhat do you understand by bio medical waste? | OHP |
| 2 | Biomedical waste handlers will state the biomedical treatment facility means. | 1 Min | “Biomedical waste treatment facility means- It is any facility wherein treatment, disposal of biomedical waste is carried out. | Teacher explains biomedical treatment facility means.What do you mean by Bio Medical treatment facility? | PPT |
| 3. | Biomedical waste handlers will be able to identify the waste category and its treatment. | 20 Min. | Identify the waste category and its treatmentCategory No. 1Human Anatomical waste-(Human tissues, organs, body parts).Treatment and disposal:Incineration, deep burial. There will be no chemical pretreatment before incineration, chlorinated plastic shall not be incinerated.Category No. 2:Animal waste (Animal tissues organs, body parts, bleeding parts, waste generated by veterinary hospitals, colleges, animal houses).Treatment –Incineration and deep burial.Color Coding – yellowType of container – Plastic bagCategory No. 3:Microbiology and Biotechnology waste – Wastes from laboratory cultures stocks or specimens or microorganisms.Treatment and disposal –Local autoclaving/incinerationColor Coding – YellowType of container – Plastic bagCategory No. 4:Waste sharps –Needles, syringes, scalpels blades, glass etc. that may cause puncture and cuts. This includes both used and unused sharps.Treatment and disposal –Disinfection (chemical treatment, autoclaving, microwaving and mutilation/shredding (to prevent unauthorized reuse.)Color Coding – Blue/WhiteTranslucent – Plastic bag/Puncture proof container.Category No. 5:Discarded medicines and cytotoxic drugs wastes comprising of outdated contaminated and discarded medicines.Treatment –Incineration/destruction and drugs disposal in secured landfills.Color coding – Black plastic bagCategory No. 6:Solid waste items contaminated with blood, and body fluids including cotton, dressings soiled plaster casts, material contaminated with blood.Treatment and disposal-Incineration and autoclaving / microwaving.Color coding – yellow disinfected container/plastic bag.Note: Linen material keep in red plastic bagCategory No. 7: Solid waste (wastes generated from disposable items other than the waste sharps such as tubing catheters, intravenous sets etc.)Treatment and disposal –Disinfection by chemical treatment/ autoclaving / shreddingColor coding – Blue / White disinfected container/ plastic bagCategory No. 8: Liquid waste – Waste generated from laboratory and washing, cleaning housekeeping and disinfecting activities.Treatment and disposal – Disinfections by chemical and discharge into drains – No container/bags.Category No. 9: Incineration Ash. – (Ash from incineration of any bio-medical waste).Treatment and disposal –Disposal in municipal landfill.Color coding – black plastic bagCategory No. 10 :Chemical waste (Chemical used in production of biological, chemicals used in disinfection, as insecticides etc.).Treatment and disposal –Chemical treatment and discharge into drains for liquids and secured landfills for solids.Color coding – Black plastic bag | Teacher gives information regarding waste categories and its treatmentTeacher give continue information regarding categories.Teacher give continue information regarding categories.What are the waste categories and its treatment? | Chartscompactionuntitleduntitled3untitled1untitled2untitleduntitled3 |
| 4. | Discuss the type of waste generated in the hospital | 10 Min. | Types of waste generated in this unit of a hospital –1) General non-hazardous/noninfectious waste like-A- PaperB- Floor sweepingsC- CardboardD- PackagingE- Food wastes and kitchen wastesNote: Waste from the laundry considered as general waste.2) Noninfectious glass and plastic bottles (articles which do not come in contact with blood or/and mucous membrane)3) Infectious waste – (all the waste that comes in contact with blood and or mucous) which includes:-A – Sharps (infectious)Used needles and syringesUsed blades used scalpelsUsed SharpB – Plastic disposable (infectious)* Syringes (after destroying needle and hub)

Gloves, I/V sets, Tubing, CathetersUrinary bags, Empty blood bagsC- Soiled Waste (soiled, non-sharp, non-plastic waste)- Cotton soiled with pus and or blood- Bandages soiled with pus and or blood)- Plaster casts that get soiled with pus and or blood- Dressings (soiled with pus and or blood)- Amputated organs of the body tissue | Teacher explains types of waste generated in the hospital.What types of waste generated in the hospital? | ppt |
| 5. | Biomedical waste handlers will be able to State rules of biomedical waste management. | 15 Min. | Rules of Bio-medical waste managementSome instructions to be followed by all the concerned personnel in the hospital are given below -1. Biomedical wastes should always be handled after wearing mask, gown and gloves
2. The infectious disposable should be treated with 1 percent sodium hypochlorite for sufficient time, disinfections of plastic waste syringes catheter, I/V bottles, rubber gloves should be done for 30 minutes. Sodium hypochlorite solution should be changed daily in the morning by dissolving 10 gm of this powder (2 spoonful) in 1 litter of water in plastic bucket.

biohazard- Samples of Aids and Hepatitis ‘B’ should be collected and covered in small yellow polythene bag with bio hazard stickers, it is a label for biomedical waste.- With adequate protective gear- All the class 4th workers should be immunized against Tetanus and Hepatitis ‘B’ because all healthcare and maintenance personnel in the hospital and waste handler are at highest risk to develop hospital acquired infection from biomedical waste they must know the biomedical waste management protocols- All waste should be collected from wards at the end of every shift.- If you get a needle stick injury you should first immediately wash the hands with soap and running water,- Washing of hands is mandatory after handling/disposing of waste-Biomedical waste management process includes collection, segregation, storage, mutilation, disinfections, transportation and final disposal. It should be managed properly. By sorting the waste into color coded plastic bucket in plastic bag. The most ideal container for collection of general waste is plastic bucket or metal tub as it can be cleaned easily, reuse, durable it must be cleaned daily.- Some of the commonly used disinfectants are -- Carbolic 1:20 for clean OT trolley- Bleaching powder 1% for disposed syringes- Dettol 1:20, Phenyl 1:20 for mopping floor | Teacher explains rules of Bio medical waste management.What are the rules of biomedical waste management? | OHP ChartsNeedle_cutter_device_2005_resize |
| 6. | Biomedical waste handlers will be able to Explain Incineration | 8 Min. | Incinerators –An incinerator carries out complete combustion of carbon containing compounds, complete combustion takes place in the presence of fuel and air. The fuel provides heat energy to attain incineration temperature and air provides oxygen for combustion. Incineration is a process where the combustible waste is reduced to exhaust gaseous products and the incombustible waste is reduced to ash. Segregation of waste is done by incineration. | Teacher gives information about incinerator.What is incineration? | OHPcompactionIncine. |
|  |  | 1 Min. | Summary:-Today we have discussed the definition of Biomedical waste and treatment facility means, waste categories and its treatment, type of waste generated in the hospital, rules of biomedical waste management and incineration |  |  |
|  |  | 1 Min. | Conclusion :-Health care facilities are the temples of maintaining health, it is necessary that these are always clean and bacteria free so as soon as there is accumulation of bio medical waste there has to be disposal of these waste.I hope this teaching will be helpful and effective to you. It will enhance and increase the knowledge for better practices |  |  |

Assignment:

SAQ 1. What is biomedical waste management?

Ans: Hospital produce many types of waste material. Many of the hospitals neither have a satisfactory waste disposal system nor a waste management and disposal policy.

Management of biomedical waste generated in hospital in a safe and effective manner is a legal obligation and a social responsibility.

To generate awareness among all concerned with the production and disposal a biomedical waste regarding the proper and effective way of dealing with biomedical waste.

2. Write short note about incinerator.

Ans: An incinerator carries out complete combustion of carbon containing compounds, complete combustion takes place in the presence of fuel and air. The fuel provides heat energy to attain incineration temperature and air provides oxygen for combustion. Incineration is a process where the combustible waste is reduced to exhaust gaseous products and the incombustible waste is reduced to ash. Segregation of waste is done by incineration.

3. What are the recommendation of new biomedical waste management by government?

ANS: Health care employees should be given training initially at placement and periodically there after about biomedical waste management and should be made aware of hazards associated with their occupation.

Employee’s medical checkup should be done periodically.

Immunization against various diseases for example Hepatitis ‘B’ and ‘Tetanus’ should be done before the workers are employed.

Gloves, masks, gowns, caps, eye protective glasses and gum shoes should be given to the biomedical waste handlers.

All employees must fallow biomedical waste management recommendations and responsibility. Media can also generate awareness among the citizens about various types of waste and their safe disposal and treatment.

A self-instructional module can be developed on the learning needs of the biomedical waste handlers.

Training and retraining of all health care workers is needed to ensure safe updated disposal of biomedical waste. BMWM is our social, moral and legal obligation that we pay attention to every aspect of it.

 The solution to the Bio medical waste problem is that of efficient and responsible management through waste minimization, responsible segregation at source and training and retraining of health care provider staff at all levels and safe disposal of hazardous biomedical waste.

LAQ1. What are the Rules of Bio-medical waste management?

Ans: Some instructions to be followed by all the concerned personnel in the hospital are given below -

Biomedical wastes should always be handled after wearing mask, gown and gloves

The infectious disposable should be treated with 1 percent sodium hypochlorite for sufficient time, disinfections of plastic waste syringes catheter, I/V bottles, rubber gloves should be done for 30 minutes. Sodium hypochlorite solution should be changed daily in the morning by dissolving 10 gm of this powder (2 spoonful) in 1 litter of water in plastic bucket.

- Samples of Aids and Hepatitis ‘B’ should be collected and covered in small yellow polythene bag with bio hazard stickers, it is a label for biomedical waste.

- With adequate protective gear

- All the class 4th workers should be immunized against Tetanus and Hepatitis ‘B’ because all healthcare and maintenance personnel in the hospital and waste handler are at highest risk to develop hospital acquired infection from biomedical waste they must know the biomedical waste management protocols

- All waste should be collected from wards at the end of every shift.

- If you get a needle stick injury you should first immediately wash the hands with soap and running water,

- Washing of hands is mandatory after handling/disposing of waste

-Biomedical waste management process includes collection, segregation, storage, mutilation, disinfections, transportation and final disposal. It should be managed properly. By sorting the waste into color coded plastic bucket in plastic bag. The most ideal container for collection of general waste is plastic bucket or metal tub as it can be cleaned easily, reuse, durable it must be cleaned daily.

- Some of the commonly used disinfectants are -

- Carbolic 1:20 for clean OT trolley

- Bleaching powder 1% for disposed syringes

- Dettol 1:20, Phenyl 1:20 for mopping floor

BAQ 1. Define biomedical waste management?

Ans: Solid waste generated during the diagnosis, testing, treatment, research or production of biological products for humans or animals (WHO)

2. Who ideally Health care facilities should be?

Ans: Health care facilities are the temples of maintaining health, it is necessary that these are always clean and bacteria free so as soon as there is accumulation of bio medical waste there has to be disposal of these waste.

MCQ

Instructions: 1). Select only one alternative that is correct.

1. (√) Tick the most appropriate answer only.
2. Kindly ensure you do not miss any item.

Q.1 “Bio Medical waste” Means –

* 1. All waste produced by animals
	2. All waste produced by humans.
	3. Any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities.
	4. Don’t Know.

Q.2 Solid bio-medical waste include –

1. Blood and body fluids including cotton, dressing soiled plaster casts, linen, bleedings, and other material contaminated with blood.
2. Waste generated from disposable items.
3. Urine, feces.
4. Both a & b

Q.3 The highest risk from biomedical waste is –

1. Visitors.
2. All healthcare & maintenance personnel in the hospital including waste handlers.
3. Doctors.
4. Workers in the laundry.

Q.4 “Bio Medical Waste treatment facility” means –

1. Only Human healthcare treatment.
2. Any facility wherein treatment, disposal of Bio-medical is carried out.
3. Only animal healthcare treatment
4. Don’t know

Q.5 4th class workers must know biomedical waste management protocols because –

1. They are at the greatest risk to develop hospital acquired infection from biomedical waste.
2. To increase their knowledge
3. To work neatly.
4. As a part of in service education.

Q.6 Biomedical waste management process includes –

1. Segregation only.
2. Segregation, proper storage and disposal.
3. Storage only.
4. Disposal only.

Q.7 Waste from laundry is considered as –

 a. General waste

 b. Infectious waste

 c. Pathological waste

 d. Chemical waste

Q.8 In which category Human Anatomical Waste is included –

1. Category 4.
2. Category 1.
3. Category 10.
4. Category 2.

Q.9 Disinfections of plastic waste (Syringes, Catheters, I.V. Bottles, Rubber gloves etc.) should be done with-

1. Carbolic acid 1:20.
2. Hypo chlorite solution 1% for 30 minutes.
3. Don’t know.
4. No need to disinfect in the ward.

Q.10 4th class workers should collect all waste from wards –

1. At the end of 24 hours.
2. At the end of every shift.
3. Once in 2 days.
4. Once in a week.

Q.11 The most ideal container for collection of general waste is

1. Plastic bucket or metal tub.
2. Cardboard box.
3. Plastic bag.
4. Paper bag.

Q.12 Samples / Specimen of AIDS and Hepatitis ‘B’ (Blood Urine Stool) should be-

1. Collected and covered in small yellow polythene bags with bio hazard stickers.
2. Collected and covered in small wooden box.
3. Collected and covered in glass bottles only.
4. Collected and covered in puncture proof container.

Q.13 Disinfections of different things may be done in the ward by any of the following method –

1. Carbolic 1:20 clean OT trolleys.
2. Bleaching powder 1% for disposed syringes.
3. Dettol 1:20, Phenyl 1:20 for mopping floor.
4. All the above.

Q.14 If you get a needle stick injury while handling used needles, you should –

1. Immediately wash the hands with soap and running water.
2. Allow the wound to bleed.
3. Report.
4. Apply antiseptic.

Q.15 Sodium Hypochlorite solution should be changed –

1. Once in a week
2. Twice in a week.
3. Daily in the morning.
4. Twice a day.

Q.16 Hand washing is done –

1. After handling/disposing of waste.
2. Before handling/disposing of waste.
3. Twice a day.
4. Once a day.

Q.17 All the 4th class workers should be immunized against –

1. Tetanus.
2. Hepatitis ‘B’
3. Both a and b.
4. None of the above.

Q.18 Color coding and type of container for disposal of discarded medicine, incineration ash, chemical waste as insecticides is –

1. White plastic bag.
2. Blue plastic bag.
3. Black plastic bag.
4. Yellow plastic bag.

Q.19 Blue plastic bag/puncture proof container used for-

1. Waste sharp.
2. Waste sharps and solid wastes such as a tubing catheter used I/V sets.
3. Blood and body fluids, soiled dressing.
4. None of the above.

Q.20 General Non-Hazardous / Non infectious waste are –

1. Paper and cardboard.
2. Floor sweepings and packaging.
3. Food waste and Kitchen waste.
4. All the above.

Q.21 If you handle infectious waste without adequate protective gear, you may get –

 a. AIDS, Hepatitis ‘B’

1. Malaria
2. Diabetes
3. Fever

Q.22 Bio-medical waste should always be handled after –

1. Wearing mask.
2. Wearing gown.
3. Wearing mask, gown and gloves.
4. Wearing gloves and mask.

Q.23 Yellow color plastic bags used for disposing –

1. Waste dressing material, waste sharp.
2. Waste dressing material & waste linen
3. Used plastic, glass and syringes
4. Used Blood material, Used Dressing material & body fluids only.

Q.24 Treatment and disposal of Human Anatomical waste and Animal waste is by –

1. Disinfections.
2. Discharge into drains.
3. Disposal in municipal landfill.
4. Incineration.

Q.25 Label of Bio Medical waste is:



 a. b.

 c. d.

Ans key :

1.b

2.a&b

3.b

4.b

5.a

6.b

7.b

8.b

9.b

10.b

11.a

12.a

13.c

14.a

15.c

16.a

17.d

18.a

19.b

20.d

21.a

22.c

23.d

24.- d

25.-a

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