

Strengthening IPC for Effective Epidemic Preparedness

FOCAL PERSONS IPC TRAINING

Topic: Healthcare Waste Management



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HEALTH CARE WASTE MANAGEMENT

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Outline

- Introduction
- What are health care waste?
- Current Practices
- Steps in health care waste management
- Conclusion



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Introduction

- Health-care activities are a means of protecting health, curing patients and saving lives.
- These activities leads to generation of waste known as healthcare waste
- Of the total amount of waste generated by health-care activities, about 85% is general, non-hazardous waste.
- The remaining 15% is considered hazardous material that may be infectious, toxic, chemical or radioactive.



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Introduction...2

- Poor waste management can jeopardize care of staff, employees who handle medical waste, patients and their families, and the neighboring population.
- In addition, the inappropriate treatment or disposal of that waste can lead to environmental contamination or pollution



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What are healthcare waste?

- Also known as “medical waste”, “Bio-Medical waste”
- Any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or from research activities pertaining to man or animal.
- They are produced during healthcare activities



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Why Healthcare waste?

- They carry a higher potential for infection and injury to man than any type of waste
- About 20% of health care waste can be dangerous. 1% of this is sharps waste.
- About 2.5% of HIV infection in sub-Saharan Africa are due to re-use of contaminated syringes for medical care (WHO, 2000 using population prevalence of HIV)
- Poorly managed HCW potentially exposes healthcare workers, waste handlers, patients and the public to infections and injuries



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Sources

- Hospitals – government, private
- Nursing homes
- Physician’s office/clinics
- Medical research and training institutions
- Mortuaries
- Animal houses
- Laboratories etc.



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Types of Waste

Categories	Examples
Infectious wastes	Waste that contaminated with blood and body fluids (pathogens) e.g., Lab cultures, tissue (swabs, bandages), equipments in contact with patient's excreta or blood, disposable medical devices etc.
Pathological waste	Human tissues, organs or fluids, body parts and contaminated animal carcasses etc.
Sharps waste	Needle, syringes, disposable scalpels and, blades etc.
Pharmaceutical waste	Expired, unused, contaminated drugs etc.
Cytotoxic Waste	Expired or leftover cytotoxic drugs, equipment contaminated with cytotoxic substances
Chemical waste	Reagents, solvents, Film developers, disinfectants, sterilant etc
Waste with heavy metals contents	Batteries, broken thermometers , sphygmomanometers etc
Pressure containers	Gas cylinders, cartridges , aerosol cans etc
Radioactive wastes	Unused liquids from radiotherapy, radio nuclides , labs etc

Current practices



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No segregation!



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Poor Storage within the health facilities



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Poor Storage



Poor mode of transportation of waste within and outside the health facilities



Inadequate method of disposal



Inadequate method of disposal



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The Victims



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Groups at risk

- Health workers –doctors, nurses
- Patients
- Visitors
- Children
- Workers in waste disposal unit



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Healthcare waste handlers

Leakage



Needle stick injury



Children



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The Community

Scavenging



Unhealthy recycling of waste



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The Environment



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Steps in health care waste management

- Waste classification
- Waste segregation
- Waste minimization
- Handling and collection
- On-site transport and storage
- Treatment and disposal



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Segregation and Handling of Waste

This is achieved by the use of

- Colour coded bin liners
- Colour coded bins
- Sharp containers/safety boxes



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Waste Segregation

- Done at point of generation of waste
- Put in separate coloured coding
- Coloured coding varies from nation to nation

SEGREGATION OF MEDICAL WASTE

HEALTH WORKERS SHOULD SEGREGATE ALL WASTE IMMEDIATELY, ACCORDING TO CATEGORY

Non-infectious Waste

- Paper/packaging material
- Bottles/cans
- Food

Infectious Waste

- Dressing
- Gauze
- Gloves
- IV fluid lines

Sharps Waste

- Needles/syringes
- Scalpels
- Blades
- Broken glass

Highly Infectious Waste

- Blood bag
- Extracted teeth
- Used test tubes
- Anatomical waste e.g. Placenta

"To protect you, your patients and others from needle stick injuries and the spread of disease ensure that waste is disposed off in the right bin always"

Adapted from PATH

USAID FROM THE AMERICAN PEOPLE

AIDS Free

Strengthening High Impact Interventions for an AIDS-Free Generation

This poster is made possible by the generous support of the American people with support from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) with the U.S. Agency for International Development (USAID). The contents are the responsibility of NCSF and do not necessarily reflect the views of USAID, PEPFAR, or the U.S. Government.

Colour coding of Medical waste

- **White** – Sharps (puncture-proof containers)
- **Red** – Biomedical waste (highly infectious waste e.g., blood bag, extracted tooth, anatomical waste etc.)
- **Yellow** – Infectious e.g., swab, dressings, iv fluid, gauze, gloves etc.
- **Black** – Hazardous pharmaceutical waste
- **Blue** – Non-hazardous pharmaceutical waste
- **Radioactive Symbol** – Radioactive wastes like fluorine-18



Labelling of Hospital waste

- Should be established as part of a healthcare waste management plan
- Recommended waste label content:
 - ✓ Date
 - ✓ Type of waste
 - ✓ Point of generation (to allow tracking)
- Weight should be routinely recorded, where possible.



Handling of Hospital waste

- Should be established as part of a healthcare waste management plan
- Waste handling
 - Requires use of proper PPE
 - Requires use of good body mechanics



Storage of hospital waste

- Waste should not be stored in the generation area for more than a period of 4-6 hours.
- It is the responsibility of sanitation staff or paramedic to check for segregation.
- Waste collected in various areas should be transported for disposal/Treatment .



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Storage containers.....Colour coded bins



Transportation of hospital waste

- There should be separate corridor and lift in hospital to carry and transport waste.
- General waste should be disposed at municipal dumps.
- Waste for autoclaving and incineration should be dumped at separate sites for external transport (Ensure separate coloured plastic bag for these waste)
- Transportation should be done in sealed container
- Sanitation supervisor should check for leakages and correct appropriately.



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Transportation of hospital waste

- Use of trucks (open & closed)
- Compression-type vehicles



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Safe transportation



Treatment and disposal of hospital waste

- General waste should be dumped at municipal dumping site.
- Sanitation officer should be responsible for proper coordination between municipal and hospital.
- Use tracking system.
- Use of label/symbol is useful in identifying waste for treatment .e.g.: Risk of corrosion, Danger of Infection, Toxic hazards, Glass Hazards, Radioactive materials etc.



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Treatment and disposal

- Incineration – involves used of high temperature in an enclosure to destroy the waste
- Chemical disinfection
- Wet and dry thermal treatment
- Microwave irradiation
- Land disposal
- Inertization



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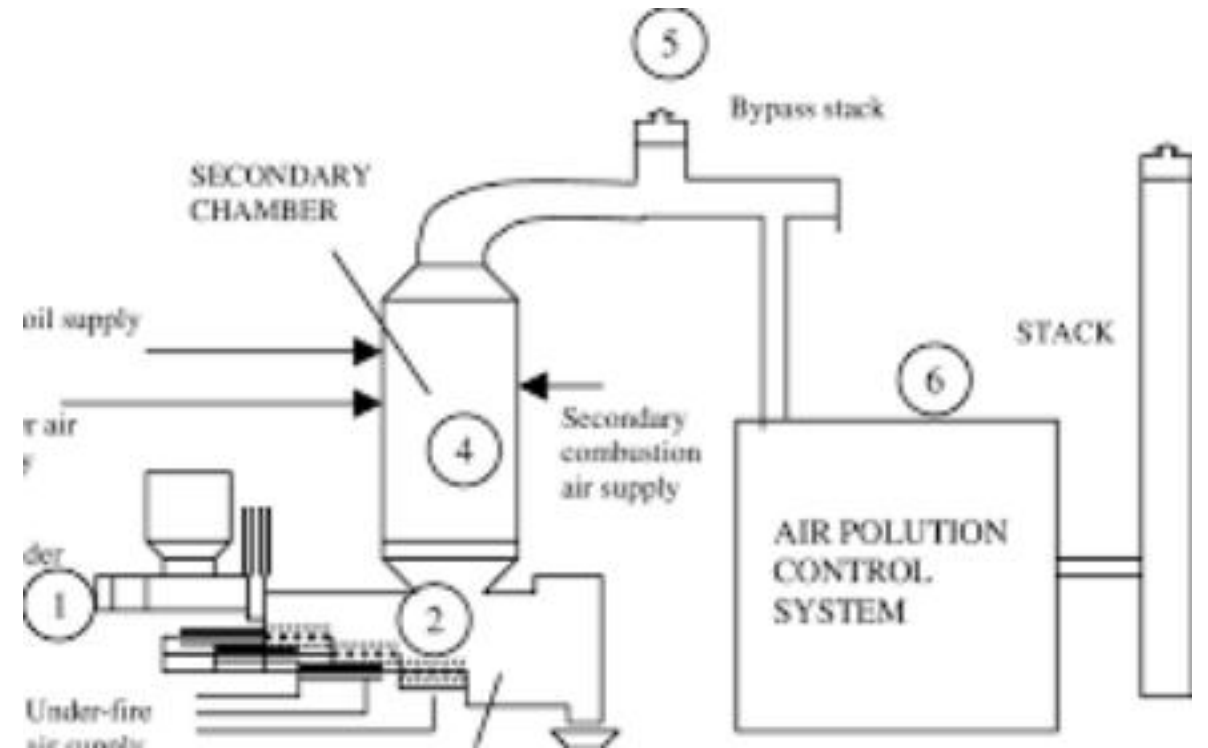


Incineration

- High temperature dry oxidation process that reduce organic and combustible waste into inorganic incombustible matter.
- Result in significant reduction in waste volume and weight.
- Process is selected to treat waste that cannot be recycled, reused or disposed on land.
- Types: Double chamber, Single chamber , rotatory kilns



Incinerator



Chemical Disinfection

- Commonly Used for treatment of liquid infectious waste e.g..
 - blood,
 - urine,
 - stool and
 - hospital sewage.
- Chemicals are added to waste to kill or inactivate the pathogen it contains.



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Wet and dry thermal treatment

- Wet thermal treatment/steam disinfection is based on exposure of infectious waste to high temperature and high pressure steam.
- Similar to process of autoclaving.
- Inappropriate for treating anatomical waste, chemical and pharmaceutical waste.
- Screw feed technology: Dry thermal treatment in which waste is shredded and heated in rotating auger.
- Reduced volume (80%) and 20-35 weight is reduced, suitable for infectious waste and sharps.



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Microwave irradiation

- Microwave of frequency 2450MHZ and wavelength 12.24cm used to destroy the microorganism.
- Water contained in the waste is rapidly heated by microwave.
- Infectious components are destroyed by heat conduction.



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Land disposal

- Open Dumps: risk for public health
- Sanitary landfills: designed and constructed to prevent contamination of soil, surface, ground water and direct contact with public.
- Engineered Dumps
- Burial of infectious hospital waste is not encouraged.



Sanitary landfill



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Inertization

- Process of mixing waste with cement and other substances before disposal in order to minimize the risk of toxic substance migrating into surface water or ground water and to prevent scavenging.
- Mixing proportion: 65% waste, 15% lime, 15% cement and 5% water may be used.
- Inertization renders the waste into a state that is not readily changed by chemical or biological reaction.



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Colour code

Type of container

Waste category

options

Yellow

Plastic bag

Human tissues, animal organs, lab culture etc

Incineration/deep burial

Red

Disinfected container/plastic bag

Cultures, specimens, soiled plaster sharps etc

Autoclaving, microwaving, chemical treatment

Blue/ white

Plastic box/ puncture proof container

Needle, syringes etc

Chemical/incineration

Black

Plastic bags

Discarded drugs, cytotoxics, ash from incinerator, insecticides chemicals etc

Disposal in secure land fill



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Steps for Developing a Waste Collection System

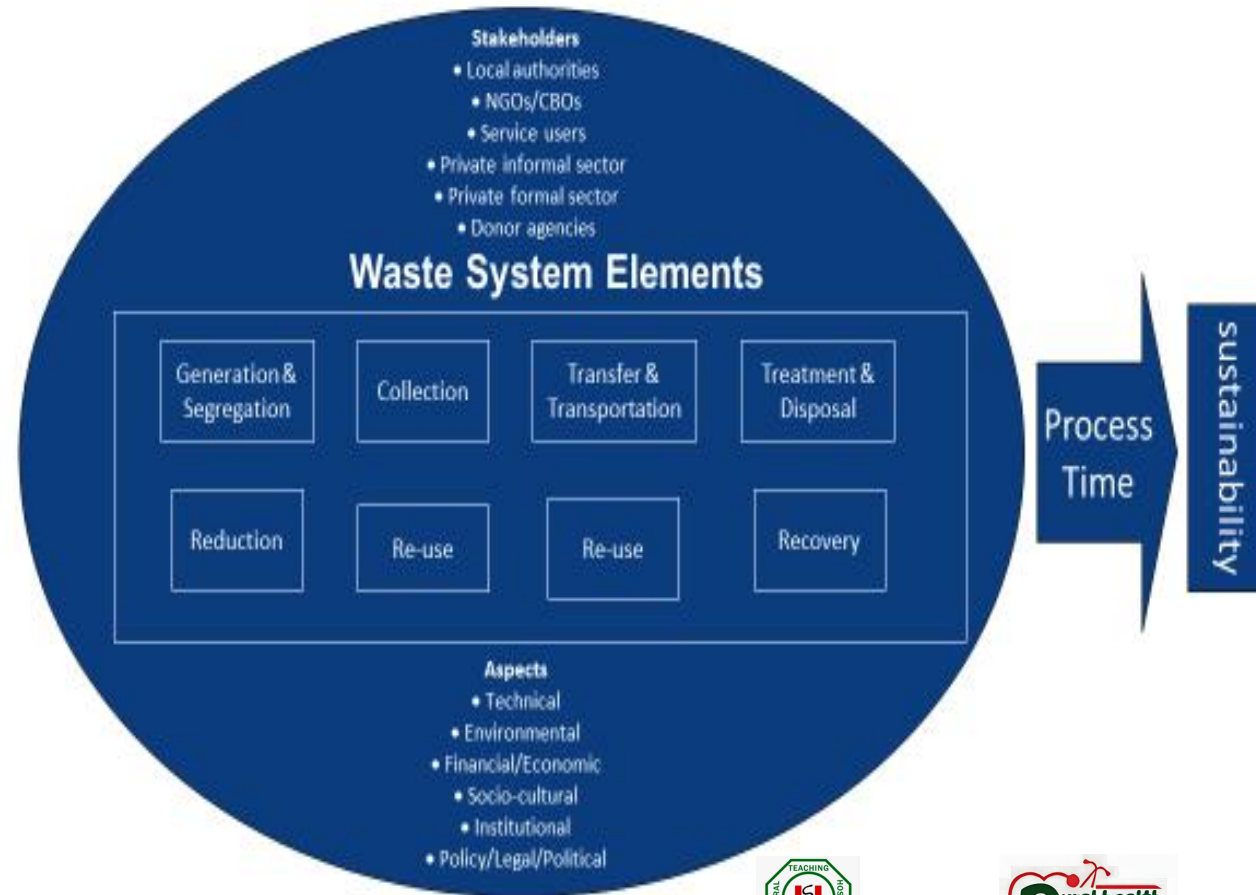
- Identify the points of generation of different types of wastes within the healthcare facility
- Quantify the amounts of wastes and calculate optimum container sizes for each area
- Evaluate how quickly the containers fill
- Set up fixed collection times so infectious waste containers are removed when 3/4th full; set up a notification procedure for whenever waste needs to be removed sooner.
- Resupply bags or containers during removal.
- Conduct continuous monitoring and improvement.



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Integrated Healthcare Waste Management System



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Steps to achieve a Sustainable Healthcare Waste Management System

1. Start a participatory planning process
2. Analyze the existing waste management situation
3. Publish and circulate the findings of the analysis
4. Formulate a draft action plan and budget, including a plan for cost recovery
5. Present the action plan to the stakeholders and incorporate their comments and input
6. Refine and formulate a final action plan, which is approved by the executive and legislative body
7. Implement the action plan and monitor the results



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Conclusion

- Considering the hazards that are associated with poor or improper health care waste, there is therefore the need for proper management of healthcare and biomedical wastes to protect the workers and the general public.



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Thank you

- Questions??
 - Comments??
- www.rhemn.org.ng



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