

HOSPITAL WASTE AS A SOURCE OF INFECTION

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WHAT IS MEDICAL WASTES?

- **All wastes generated within a medical set up and includes:**
- **general practitioners surgeries.**
- **nursing homes.**
- **dental practices.**
- **laboratory and research establishments.**
- **as a result of midwifery and other medical care in homes.**

WHAT IS INFECTION?

- **Invasion & multiplication of a pathogenic micro-organism**
 - **In a body part or tissue**
 - **May result in tissue injury**
 - **May lead to disease (cellular or toxic mechanism)**

BROAD CLASSIFICATION OF WASTES

- **solid**
- **Liquid**

SOLID AND LIQUID WASTE



THE GLOBAL PROBLEM

- **35 million HCW globally**
- **2 million experience percutaneous exposure**
- **37.6% HBV**
- **39.0% HCV**
- **4.4% HIV/AIDS**
- **50% of people with HBV infection are unaware that they have the virus**

EXPOSURE TO HC WASTES

- **WHO?**
- **WHERE?** – Treatment rooms, Theatres, waste collection
- **WHEN?** - during or after procedure
- **HOW?** – Recapping, Decontamination, contact

OSHA ACCIDENT RATES FROM 63 HOSPITALS (WHO?)

- **OVERAL 27⁰%**
- **Nurses 49.7⁰%**
- **Physicians 12.6⁰%**
- **Nursing assistants 5.3⁰%**
- **House keepers 5.1⁰%**

Hollow bore needles were the main cause in exposure at 68.5⁰%

MEDICAL WASTE GENERATORS

- **general practitioners surgeries.**
- **nursing homes.**
- **dental practices.**
- **laboratory and research establishments.**
- **as a result of midwifery and other medical care in homes.**

Hazardous hospital waste.

- forms 10-25% of the waste generated in hospitals.
- may contain infectious agents.
- may be genotoxic/cytotoxic
- may contain toxic and hazardous chemicals/pharmaceuticals.
- may be radioactive.
- may contain sharps.

INFECTIOUS COMPONENTS AND SHARPS.

May transmit HIV/Aids, Hepatitis B and C, and other infectious diseases

- **to patients, healthcare workers, the general public and may contaminate the environment.**

Institutions generating medical waste have a “duty of care”

- **For their workers,**
- **for public health,**
- **To the environment**

Proper health-care waste management has to be practiced to prevent infections.

Management to include:

- **waste minimization.**
- **segregation.**
- **collection.**
- **treatment.**
- **(sanitary) disposal**

MEDICAL WASTE SEGREGATION



SEGREGATION CONT.



MEDICAL WASTE COLLECTION & TRANSPORTATION



MEDICAL WASTE TREATMENT



GENERAL APPROCHES TO WASTE REDUCTION

- **Source reduction**
- **Material elimination**
- **Recycling**
- **Product substitution**
- **Technological/process change**
- **Use of good operating practices (GOPs)**
- **Preferential purchasing**

Personal Precautions

Use PPE which can include:

- **Gloves**
- **Gowns/Aprons**
- **Mask – full face masks?**
- **Eye Protection**
- **Shoes/ shoe covers**
- **Wash hands thoroughly after handling all waste**
- **Vaccinate healthcare staff and those at risk against hepatitis B, C, etc.**

Waste Management Strategies:

Waste Minimization

- **Purchase supplies with less packaging**
- **Purchase supplies that are less hazardous**
- **Order in smaller quantities**
- **Use the oldest first (FIFO)**
- **Use all the contents**
- **Check expiry date at the time of delivery (MSDS)**
- **Recycle or reuse items not directly used for medical care**

Infectious Waste Segregation program

Segregation may divide waste into:

- **Sharps**
- **Infectious non-sharps (clinical, highly infectious)**
- **Genotoxic**
- **Non-hazardous**

Segregation should Take place:

- **At the time of generation**
- **Carried out by the person generating the waste**

KEY ELEMENTS OF CONTROLLING INFECTIONS

- **Effective segregation**
- **Proper storage**
- **Good collection systems**
- **(Treatment)**
- **Transportation**
- **Disposal**

Recommended color coding for infectious waste and sharps by WHO:

| Type of Waste | Container Colour and Label | Type of Container |
|---------------------------------------|---|---|
| Highly infectious | Yellow, marked “HIGHLY INFECTIOUS” | Strong, leak-proof plastic bag or double bag |
| Infectious or pathological | Yellow | Double plastic bags |
| Sharps | Yellow, labeled “SHARPS” | Puncture-proof container |

WASTE COLOR CODING



Segregate Waste



Waste Collection

- **Make sure waste is properly bagged or contained and closed**
- **Do not open, shake, squeeze, compact or crush the bags**
- **Bags should be carried by their necks and away from the body. Do not lift or hold the bag by the bottom or sides.**
- **Place bags carefully into proper receptacles or on the ground.**

Treatment of medical wastes

- **Chemical disinfection**
- **Encapsulation of needles**
- **Autoclaving, microwaving (Inertization) of waste**

Sharps

- **If exposed, treat as infectious.**
 - **Disinfect.**
 - **Place in double plastic bags or other puncture proof container.**
 - **Seal the bags or container.**
 - **Incinerate or dispose of in sanitary landfill.**

Medical Waste Disposal

Solid infectious waste should be:

- **Incinerated in standard incinerators –Pyrolytic (if can't be avoided)**
- **Buried or disposed of in a sanitary landfill.**

Liquid infectious waste should be disposed of in sewer systems after treatment and neutralization.

Other Management Supports for the Waste Minimization Strategies

- **maintain record of daily weights of infectious waste and sharps generated.**
- **establish generation rates. (waste per patient or per bed/day)**
- **Put in place infectious waste/sharps, quantity reduction strategies.**
- **monitor and investigate possible mix up of infectious and general waste.**

Capacity Building

- **Establish and instill ownership responsibility on management of healthcare waste among all healthcare staff in hospitals.**
- **incorporate in training curricula of all health professionals, a course in healthcare waste management and Occupational Health and Safety.**
- **provide maximum support for continuing education to all healthcare staff by holding regular training in workshops/seminars.**

Injuries and Infections Surveillance.

- **Maintain a record of injuries due to sharps waste.**
- **Record action taken including Post Exposure Prophylaxis (PEP) administered.**
- **maintain records on infections resulting from health-care waste.**

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THANK YOU

