HOSPITAL WASTE MANAGEMENT
ISSUES AND STEPS TAKEN BY
THE GOVERNMENT OF PAKISTAN

OCT 2006

Presentation By:

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Sequence of Presentation

- Introduction
- Situational Analysis
- Hospital Waste Management Project
- Main Objectives
- Project Outcomes
- Major Recommendations
- Responsibility for Waste Management
- Awareness and Advocacy
- Training Component
- Action Plan
Introduction

- **Hospital waste include** all waste arising from healthcare establishments.

- Studies in Pakistan show that large hospital’s generate 2.0 kg of waste, per bed per day. Of this, 0.5 kg can be categorized as **biomedical risk waste**.

- There are many small hospitals and clinics which also generate risk waste in significant quantities.
Introduction (contd.)

- Daily Medical Waste Generation (from both public & private sector hospitals):
  Approx 0.8 million tons
  (Source: UN & HSA, MoH)

- Improper disposal practices results in reuse of discarded syringes, IV tubes, blood bags and other equipment which is not designed for either sterilization or reuse.

- If hospital waste is not properly managed and disposed of, it can result in injury by contaminated sharps and infection with Hepatitis B, C, and HIV.
Situational Analysis

1. In Pakistan there are about 92,000 beds in public sector hospitals
2. Pakistan – Population 160 million will rise to 250 million by year 2025
3. Amount of Hospital Waste generated will increase to alarming rates due to growth of population and healthcare facilities
4. No well established segregation system
5. Frequent dumping of hospital waste with municipal waste
Situational Analysis (contd.)

6. Major sources of water table pollutions
7. Lapses in Landfill designs
8. Maintenance and monitoring issues of incinerator technology
9. Issues related to behaviors change
10. Need proper integrated management, priority setting & infrastructure development
Initial Project Outcome:
- Draft Hospital Waste Management Rules 2002
- Draft Guidelines on Hospital Waste Management
- Specifications and Guidelines on Incinerators
HWM: A Perspective

2004: Revised HWMP (Duration: 24 months)

MoE re-launched project under IESE & NUST Consulting (NUST Subsidiaries under MoST) & HSA under MoH

Tasks Assigned:
• Organize FOUR National Training HWM Workshops (Cadre-wise, one in each province)
• Review HWM & Incinerator guidelines
• Finalize curriculum for paramedics
• Launch National Consensus Seminar subsequent to Experts’ Consultative Sessions
HOSPITAL WASTE MANAGEMENT PROJECT
(May 2004 – August 2006)
Main Objectives

- Review the existing conditions of HWM facilities
- Identify deficiencies in the major cities
- Propose a financially viable program for elimination of environmental and health hazards
- Consolidate the work already done in the area
Project Outcomes

- Hospital Waste Management Rules 2005
- Guidelines on Hospital Waste Management
- Specifications and Guidelines on Incinerators
- Training Manuals for Paramedics
Major Recommendations

Areas:

a. Implementation of HWM Rules 2005 at all levels
b. Improvement through HWM Guidelines at District Level
c. SOPs: formulation by all healthcare facilities
d. Regular Training Programmes / Refreshers (Cadre-wise)
e. HWM component needs improvement in curriculum at MBBS/BDS/DVM & nursing / paramedics level
f. Mass Awareness
g. Stick & carrot policy
h. Enforcement of laws needed to nudge hospitals into compliance
h. Research
Responsibility for Waste Management

Waste Management Team of the Hospital/ Clinic/ Lab. shall be responsible to ensure proper management of the waste generated in the Hospital/ Clinic/ Lab.
Duties & Responsibilities of WMT

- Preparation and Monitoring of Plan
- Periodic Review
- Revision or updating
- Implementation of WMP
- Compliance
Hospital waste can be broadly be defined into 2 categories:

**Risk Waste**
- Infectious Waste
- Pathological Waste
- Sharps
- Pharmaceutical Waste
- Chemical Waste
- Radioactive Waste

**Non – Risk Waste**
Non – risk waste is that which is comparable to normal domestic garbage and presents no greater risk, therefore, than waste from a normal home i.e.
- Paper
- Packaging
- Food Waste
Waste Disposal

Treatment:
- Incineration
- Chemical Disinfection
- Autoclaving
- Encapsulation
- Microwave irradiation etc.,

Final Disposal
- Landfill
- Burying inside Premises
- Discharge into Sewer etc.,
Unsafe Acts -- Checklist

- Operating without authority
- Failing to secure objectives
- Failing to give adequate warning signals
- Operating or working at unsafe speed
- Warning on moving of dangerous equipment
- Engaging in horseplay
- Failing to use personal protective devices
- Tampering with safety devices
- Using unsafe equipment and using safe equipment unsafely
- Handling, lifting, or carrying unsafe loads
- Taking unsafe positions or postures
Waste Minimization

Waste *not* to be Incinerated

- Pressurized gas containers
- Large amounts of reactive chemical waste
- Radioactive waste
- Silver salts or radiographic waste
- Halogenated plastics (e.g. PVC)
- Mercury or cadmium
- Ampoules of heavy metals
Awareness & Advocacy

- Awareness Through
  * Posters
  * Seminars
  * Letters
  * Web-Site
  * Poster Competitions

- Advocacy
  * Media
  * Lobbying
Hospital Waste Management Project
3rd Phase of 5-day training workshop

Venue
ICMS University Campus
Peshawar
18th to 22nd April, 2005.

Organized by
National University of Sciences & Technology (NUST), MoST
& Health Services Academy (HSA), MoH, Islamabad

in collaboration with
Federal Ministry of Environment

Environment Friendly Healthy Hospital Initiative
Training Manual for Paramedics

Hospital Waste Management Sensitization Program

Venue
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18th to 22nd April, 2006.

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Environment Friendly Healthy Hospital Initiative
Training Manual for Nurses

Hospital Waste Management Sensitization Program

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Training Manual for Sanitary Workers

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Environment Friendly Healthy Hospital Initiative
TRAINING COMPONENT

- Three Kinds of Training Manuals Developed; English, Urdu & Pictorial
- Training Video
- Free Training Programme
- Refresher Courses
- 4500 Health Professionals & Allied Staff provided free training in Govt. & Private Sector Hospital of Lahore.
WHY SHOULD THIS PROJECT BE REPLICATED IN OTHER CITIES

- TO SHOW SOCIAL RESPONSIBILITY
- IT IS A SUCCESSFUL MODEL
- TO REDUCE THE BURDEN OF DISEASES
- TO PREVENT REUSE AND REPACKING OF MEDICAL DISPOSABLES
Steps Involved

- Waste Man. Team
- W -M. Plan
- Training
- Waste Segregation
- Waste Collection
- Waste Storage
- Transportation
- Disposal
Waste Segregation

- Different color coding has to be assigned to various waste for effective segregation, as:
  
i. Black: Non-Risk waste.
  
ii. Red: Risk waste with Sharps.
  
iii. Blue: Risk Waste without sharps.
  
iv. Yellow: Radioactive waste
  
v. Green: Chemicals like Mercury & Cadmium

- All this segregation should be done by the individual user.
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Waste Collection

To be done by Sanitary staff on daily basis, and transferred to Central Waste storage facility of the Institute.
Waste Storage:

- Storage facility should be covered one, located within the hospital premises outside the main building, with easy approach for vehicles, and inaccessible to unauthorized persons and animals etc.
- Should have sufficient capacity to contain large amount of waste in case of incinerator failure.
- Separate storage room for radioactive waste (yellow Bags).
- As quoted in Rules, storage at temp 3 – 8C is not practicable.
Transportation

On-Site:

- All waste bags except yellow ones, should be transferred to W. Storage room on daily basis by the sanitary workers by Four–wheeled trolleys (three wheeled are quite uncomfortable).
- Different colored bags have to be segregated in the storage room.

Off–site:

- Should be arranged by concerned municipal / local authority. The waste should be transferred to the vehicle by sanitary worker under the supervision of WMO.
Waste Disposal

- Landfill: properly designed and properly managed. - Cheapest and easily available.
- Shredders: All the bulk waste of plastic including risk waste is disinfected and cut into small pieces and converted into compact form. (Cheaper than incinerator, No Pollution, cost effective).
- Autoclave: (expensive than Shredders ?)
Risk of Waste

All persons exposed to hazardous hospital waste are potentially at risk which includes all those who either handle the waste at any stage, or are exposed to it as a consequence of careless management.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Who</th>
<th>Outcome</th>
<th>Timeline</th>
<th>Benefits/Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Formation</td>
<td>MS/Medical Director</td>
<td>Formalized Waste Management Plan</td>
<td>1 month</td>
<td>Participation of employees in HWM</td>
</tr>
<tr>
<td>Waste Segregation</td>
<td>Everyone, specifically the housekeeping staff</td>
<td>Color coded waste bags</td>
<td>2 weeks (includes training of staff)</td>
<td>Health Safety of employees and general public</td>
</tr>
<tr>
<td>Waste Collection</td>
<td>Sanitary staff</td>
<td>Facilitate storage</td>
<td>2 weeks</td>
<td>Secure Waste Collection</td>
</tr>
<tr>
<td>Transportation</td>
<td>Sanitary Staff</td>
<td>Safe Disposal of Waste</td>
<td>2 weeks</td>
<td>Documentation on Waste Disposal</td>
</tr>
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<tr>
<td>Accidents and Spillages</td>
<td>Waste Management Officer</td>
<td>Safety</td>
<td>Anytime</td>
<td>Better Hygiene</td>
</tr>
<tr>
<td>Training for Hospital Waste</td>
<td>MS/Medical Director/Administrator</td>
<td>Awareness</td>
<td>Anytime</td>
<td>Better Management of HWM</td>
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<tr>
<td>Management</td>
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</tbody>
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# Stakeholders Analysis

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Hospital Staff</td>
<td>Trainings, Waste manag</td>
<td>Waste generator, At risk</td>
<td>Follow guidelines</td>
</tr>
<tr>
<td>Patients/attendents</td>
<td>BCC</td>
<td>Waste generator, At most risk</td>
<td>Counseling, poster, clips, charts etc.</td>
</tr>
<tr>
<td>Municipal Staff</td>
<td>Equip, BCC, Training</td>
<td>Involved in WM</td>
<td>Improving behavior, funding, incentives</td>
</tr>
<tr>
<td>Scavengers</td>
<td>Restriction, Punish, Education</td>
<td>Source of inf. Dissemination, at risk</td>
<td>Secured storage</td>
</tr>
<tr>
<td>Community Reps</td>
<td>Advocacy, Involve, Communicate</td>
<td>Political influence, responsible of comm</td>
<td>land, awareness, monitoring</td>
</tr>
<tr>
<td>Environ. agency</td>
<td>Tech assistance, training, Monitoring</td>
<td>Expert and Resources and policy makers</td>
<td>Inspect and monitor</td>
</tr>
<tr>
<td>Law Enf. Agency</td>
<td>Enforcement</td>
<td>Power to enforce</td>
<td>Proper enforce of rules</td>
</tr>
<tr>
<td>NGO</td>
<td>Advisory, Advocacy, Financing</td>
<td>Will, resources, impartial, expertise</td>
<td>Public-Private Partnerships</td>
</tr>
<tr>
<td>Media</td>
<td>Awareness, educat, monitoring</td>
<td>Influence on behaviour</td>
<td>Ads, messages, pictorals, awareness programs</td>
</tr>
<tr>
<td>Legislators</td>
<td>Effective Legislation</td>
<td>Basic responsibility</td>
<td>Effective updates, incentives, accreditation</td>
</tr>
</tbody>
</table>
THANK YOU VERY MUCH