MODULE 5: HCWM Planning in a Healthcare Facility
Module Overview

• Describe the principles and framework for management of healthcare waste

• Describe the steps for developing a waste management plan

• Identify key members of a waste management team and their associated tasks

• Describe how to conduct a healthcare waste assessment in your facility

• Discuss potential obstacles to implementing a healthcare waste management plan and how to overcome them
Learning Objectives

• List the steps for developing a HCWM Plan
• Understand how to conduct a waste assessment
• Describe the contents of a HCWM Plan
• List the responsibilities of key members of a HCWM team
• Describe some tools used in HCWM planning
• Identify barriers to implementing an effective healthcare waste management system and strategies to overcome them
General Principles

• Planning for HCWM at the facility level should take into consideration the World Health Organization (WHO) core principles for achieving safe and sustainable management of healthcare waste

• The right investment of resources will result in a substantive reduction of disease and corresponding savings in health expenditures
General Principles

• The effective management of health care waste depends on:
  – good administration and organization
  – adequate legislation and financing
  – active participation by trained and informed staff
  – Monitoring and continuous improvement

• The end result is to:
  – decrease the burden of disease
  – reduce the pollution associated with healthcare waste and its attendant effects on healthcare workers and the community
Framework for the Management of Healthcare Waste

- HCWM is inextricably linked to infection control & prevention, occupational health & safety, patient safety, and environmental protection.
- National and local laws and regulations establish minimum requirements for HCWM; international laws and standards complement national and local laws.
- HCWM plans are roadmaps towards creating and sustaining good HCWM systems in healthcare facilities.
- Participatory planning promotes stakeholder ownership.
- Funding and human resources allocated to HCWM are essential for sustainability.
- Commitment by the administration, fostering environmental champions among staff, and capacity building can bring success.
- Planning is an adaptive process with periodic review and updating.
Planning is an Evolving and Adaptive Process

- Evaluation
- Planning
- Implementation
- Monitoring

- Capacity Building
- Policy & Guidelines
- Leadership
- Networks & Partnerships
- Financial Resources
- Human Resources
Preparing for HCWM Planning

- Obtain top-level administrative support
  - Rationale include regulatory compliance, cost reduction, worker safety, patient safety, enhanced infection control, community relations

- Form a HCWM planning committee
  - Representation from management, heads of departments generating waste, medical and nursing officers, infection control officer, safety officer
  - Other key members: training coordinator, purchasing manager, head of facility engineering, housekeeping manager, head of central sterile supply
Preparing for HCWM Planning

• Review regulatory requirements and existing standards
  ▪ Become knowledgeable about applicable national and local laws and regulations, accreditation requirements, and standards on waste management, worker safety, environmental pollution, etc.
  ▪ Be aware of any applicable international laws and guidelines
  ▪ Be familiar with WHO policies and recommendations on HCWM and related issues such as infection control

• Establish the committee’s mission, goals and specific objectives
Steps for Developing a HCWM Plan

• Establish the baseline
  ▪ Develop detailed mapping of waste flows in the healthcare facility
  ▪ Conduct a waste assessment
Conducting a Healthcare Waste Assessment

- Examples of data obtained during a healthcare waste assessment:
  - Basic facility data
  - Rapid assessment score (using the I-RAT tool)
  - Information on waste management practices
  - Waste generation
    - Waste generation rates per department
    - Breakdown of waste generation according to classification
    - Evaluation of the levels of segregation
    - Average waste generation rate (kilograms per bed per day) and average bulk densities (kg per liter)
  - Inventory of containers, sizes and locations; collection frequency and routing
  - Information on HCWM training
  - Occupational safety data
  - Cost data on HCWM
  - Estimate of dioxin releases (for facilities using incinerators) and mercury usage data
Sample Sheet for Waste Generation Assessment

<table>
<thead>
<tr>
<th>Waste-collection point: department / location</th>
<th>Waste category(^a) (specify)</th>
<th>Quantity of waste generated per day (weight and volume)</th>
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\(^a\) Infectious waste, pathological waste, sharps, pharmaceutical waste, cytotoxic waste, waste with high heavy metal content, radioactive waste.
Conducting a Healthcare Waste Assessment

- A baseline provides information on the initial condition of the facility to:
  - determine what best practices and techniques should be introduced
  - develop and monitor performance indicators
  - be used as the initial reference point
  - be used as a starting point for future assessments
  - be used as a basis for future evaluations
  - collect written and photographic documentation
  - decide what technologies should be used
  - decide what waste storage and treatment capacity is needed
Steps for Developing a HCWM Plan

• Review the baseline data

• Identify problems in HCWM practices
  ▪ Consider practices in training, segregation, handling of sharps, waste collection, transport, storage, cleaning of bins and storage areas, spill response, etc.

• Identify problems in HCWM equipment
  ▪ Consider the size, quantity and quality of bins, sharps containers, and carts; container colors and markings; treatment technology; availability and condition of PPE; transport vehicles; etc.
Steps for Developing a HCWM Plan

• Prioritize issues and targets for improvement
  ▪ Priorities should be based on stated goals and objectives.
  ▪ Management of sharps, blood & body fluids, and lab culture waste is generally a high priority.
  ▪ Worker protection and waste minimization are also important priorities.
Steps for Developing a HCWM Plan

- Establish proper HCWM practices
  - Develop a set of written procedures based on existing regulations, WHO guidelines and international standards for best practices

- Review technology options, conduct technical and economic evaluations, and select technologies
  - A technical evaluation determines if a proposed option meets minimum standards and will work for the specific application.
  - An economic evaluation looks at investment and operating costs of proposed equipment and determines the most cost-effective option.
Steps for Developing a HCWM Plan

- Employ a participatory approach to HCWM planning
  - Organize consultation meetings with the staff of each department and other stakeholders (waste workers, cleaners, outside waste collectors, municipal officials, etc.)
  - Raise awareness about the need for good HCWM and generate interest and participation in the planning process
  - Ask for their input on proposed new practices and technologies
  - Obtain information on the steps, resources and time needed to transition to the proposed waste management system
  - Identify potential environmental champions and members of a HCWM organization from among the staff of each department
Steps for Developing a HCWM Plan

• Draft the HCWM Plan – contents:
  ▪ Rationale for HCWM
  ▪ Review of the present situation and data from the waste assessment
  ▪ HCWM organization
    ▪ Organizational structure
    ▪ Roles and responsibilities of managers and staff
    ▪ Linkages with infection control, safety, quality and other committees
Typical Waste Management Structure

- **Head of Hospital**

- **Advisors**
  - Infection control
  - Pharmaceutical

- **Hospital Engineer**
  - Head of Environmental Services

- **Department Heads**
  - Medical and Dental Engineering
  - Pharmacy
  - Radiology
  - Laboratory
  - Blood Bank
  - Catering
  - Housekeeping
  - Internal transportation system
  - Administration
  - Finance

- **Support Staff**

- **Hospital attendants, ancillary workers and waste handlers**

- **Ward sisters, nurses and medical assistants**

Liaison paths

Line management paths
Waste Management Team

• Typical members of the Waste Management Team

  – Head of Hospital
  – Heads of Hospital Departments
  – Infection Control Officer
  – Chief Pharmacist
  – Radiation Officer
  – Matron/Senior Nursing Officer
  – Housekeeping In-charge
  – Hospital Manager
  – Hospital Engineer
  – Supplies officer: supply chain management
  – Financial Controller
  – Waste Management Officer and waste management handlers
Roles and Responsibilities

• Head of Hospital or Establishment
  – Formalizes the waste management team
  – Works with the team to develop the waste management plan
  – Designates the waste management officer (WMO)
  – Allocates financial resources and manpower
  – Ensures monitoring procedures are followed
  – Ensures adequate training of key staff
  – Ensures that agreed practices are carried out and practices are corrected
  – Ensures safety of staff through vaccination, PPE, access to hand-washing facilities for staff
Roles and Responsibilities

• Waste Management Officer
  • Has overall responsibilities for:
    – development of the HCWM Plan
    – subsequent day-to-day operation and monitoring of the HCWM system
    – incident management and control
    – HCWM training
  • This waste management officer may be the infection control officer/nurse or the hospital facility engineer.
Roles and Responsibilities

• **Department Heads:**
  – Responsible for segregation, storage, and disposal of waste generated in their departments

• **Matron and Hospital Manager:**
  – Responsible for training nurses, medical assistants, and other ancillary staff in the correct procedures for HCWM
Roles and Responsibilities

• Chief Pharmacist/Radiation Officer:
  – responsible for safe management of pharmaceutical stores, cytotoxic agents and waste minimization
  – radiation officer duties are specific to radioactive wastes

• Supply Officer:
  – liaises with the WMO to ensure continuous supply of required items

• Hospital Engineer:
  – installs and maintains waste storage facilities and handling equipment that comply with specifications of national guidelines
Roles and Responsibilities

• Infection Control Officer:
  - liaise with the waste management officer on a continuous basis and advise on the control of infection and standards as they relate to waste treatment and disposal
Steps for Developing a HCWM Plan

• Draft the HCWM Plan – contents (cont’d):
  ▪ Describe the new practices, including
    – Flowchart for waste segregation
    – Procedures for handling, storage, transport, etc.
    – Monitoring procedures for segregation of waste categories and their destinations
    – Emergency procedures

Infectious Waste
- 15-20% sharps
- blood
- body fluids
- cultures
- stocks
- pathological waste

Hazardous Chemicals
- 1-5%
- pharmaceutical waste
- cytotoxics
- lab solvents
- cleaners
- degreasers
- mercury, lead

Recyclable Waste
- 30-60%
- plastics
- glass
- metal
- cardboard
- paper
- wood
- food waste

Municipal Waste
- 30-60%
- all non-infectious, non-hazardous, non-recyclable waste
Steps for Developing a HCWM Plan

• Draft the HCWM Plan – contents (cont’d):
  ▪ Describe the new technologies, including
    – Drawings showing locations of containers, storage areas, and collection routes/timetable
    – Design specifications (types of bags, bins, trolleys, sharps containers, etc.)
    – Information on the treatment technology and preventive maintenance schedules
    – Material and human resources required by the technologies (numbers needed, number of personnel needed)
Steps for Developing a HCWM Plan

• Draft the HCWM Plan – contents (cont’d):
  ▪ Describe plan for waste minimization
    - Waste prevention
    - Source reduction
    - Reuse
    - Recycling
    - Composting
    - Energy recovery
Steps for Developing a HCWM Plan

• Draft the HCWM Plan – contents (cont’d):
  ▪ Training plan
    ▭ Mandatory requirements, course topics, refresher training, documentation/certification, evaluation
  ▪ Worker health & safety plan
  ▪ Contingency plan for spills, equipment breakdown, technology maintenance downtime, and emergencies
  ▪ Capital, operating and maintenance costs of HCWM equipment and treatment technology
Steps for Developing a HCWM Plan

- Draft the HCWM Plan – contents (cont’d):
  - Detailed roadmap for achieving the goals and objectives
    - Subdivide the work into manageable components
    - Define the scope and achievable outcomes of each component
    - List activities for each component, as well as sequencing and estimated duration of activities (timeline), required human resources, budget, measurable indicators, and persons responsible for implementation and/or supervision of each component
    - Clearly define the measurable indicators of achievement
Steps for Developing a HCWM Plan

• Draft the HCWM Plan – contents (cont’d):
   System of regular monitoring and evaluation
   Provisions for documentation, record-keeping, and reporting
   Periodic review and updating of the HCWM Plan
Steps for Developing a HCWM Plan

• Other considerations when developing the HCWM plan
  – Take into account future growth and expansion of the facility
  – Evaluate the effectiveness of existing measures, costs or cost savings of added measures, environmental & energy impacts
  – Conduct an assessment of reusables vs. disposables to reduce waste without compromising the patient safety
  – Consider environmentally friendly, state-of-the-art, non-incineration treatment technologies
  – Consider an incentives program, such as awards for the most improved department, recognition of environmental champions, pay bonuses, educational credits, career development, etc.
Tools for HCWM Planning

- Use activity timelines (e.g., Gantt chart)

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<tr>
<th>Activities</th>
<th>Year 1</th>
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<td>Meetings of the HCWM Committee</td>
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<td>Stakeholder consultations</td>
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<td>Finalization of HCWM Plan</td>
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<td>Recycling agreement with municipality</td>
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<td>Equipment procurement</td>
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<td>Construction of new storage areas</td>
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<td>Renovation of waste treatment building</td>
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<td>Training of health professional staff:</td>
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<td>Training of auxiliary staff</td>
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<td>Training of administrative &amp; clerical staff</td>
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<td>Distribution of HCWM equipment</td>
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<td>Full Implementation of recycling system</td>
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<td>Installation of new autoclave technology</td>
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<td>Full implementation of new HCWM sys</td>
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<td>Implementation of monitoring system</td>
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<td>Procurement of mercury-free devices</td>
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<td>Phase-out of mercury devices</td>
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<td>Implementation of inventory control sys</td>
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<td>Review and update of HCWM Plan</td>
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<td>Refresher training</td>
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Tools for HCWM Planning

- Track expenditures and control costs
Tools for HCWM Planning

• Strategies to address organizational problems that hinder implementation
  – Process strategies
    • Team building, sensitivity training, conflict resolution, leadership modeling, mentoring, effective facilitation and communication strategies
  – Structural strategies
    • Job enrichment, benchmarking and performance management, reward systems, organizational restructuring
Parameters to be Monitored by the Waste Management Officer

- Waste generated each month by waste category in each department
- Maintenance of the treatment technology
- Waste handled safely and in accordance with the safety operation procedures:
  - Occupational safety (e.g. use of PPE)
  - Proper segregation at source
  - Availability and use of bags, containers, bins and other equipment
  - Marking, labeling and signage
  - Internal transport and storage
  - Treatment and disposal
Parameters to be Monitored by the Waste Management Officer

• Financial aspects of healthcare waste management:
  – direct costs of supplies and materials used for collection, transport, storage, treatment, disposal, decontamination, and cleaning;
  – training costs (labor and material);
  – costs of operation and maintenance of on-site treatment facilities; costs for contractor services

• Occupational safety and public health aspects:
  – Incidents resulting in injury, “near misses”, or failures in the handling, separation, storage, transport, or disposal system – these should be reported to the Infection Control Officer and the Waste Management Officer, and will be the basis for measures to prevent recurrences.
Reporting

Once the HCWM system is put in place:

- The Waste Management Team reviews the HCWM Plan annually and initiates changes necessary to upgrade the system
- The Waste Management Officer prepares an annual report approved by the head of the hospital and submits the report to the government agency responsible for healthcare wastes
Potential Obstacles

- Lack of knowledge at the individual and establishment level
- Lack of top management commitment
- Lack of national policy
- Healthcare staff unaware of health and safety risks
- Unaware of environmental and public health risks
- No one assigned responsibility for healthcare waste
- Lack of budget for implementation
  - Begin small and expand
Is your HCWM plan working?

• Revised objectives?
  – introduce segregation practices in all departments in the next year
• Level of consistency and coordination throughout hospital/all departments
• Cost-effectiveness
• Key leaders, administration, clinician support
• Managed effectively- monitoring data
• Changes in staffing, disposal policies, to meet new goals?
• Meet all regulatory requirements?
• Sufficient, periodic and ongoing education and training of all staff?
• Visual reminders and reinforcements of practices
  – posters, in-service education sessions
• New technology?
• Adequate budget?
• OHS committee?
• Contingency plans?
• Future plan projections?
Discussion

- What do you consider as the most important aspects when creating an effective healthcare waste management plan?
- What details are included in your facility’s own waste management plan? How do they compare to the elements included in the ideal WMP?
- How does your HCWM program align with the national and local regulations and guidelines?
- What is the typical waste management structure in your own facility?
- Do you have a waste management team with delegated responsibilities? Who makes up this team?
- Who should be responsible for implementing a waste management plan, and what are some of the essential steps that need to be taken?
- What are some of the obstacles to successful implementation of a WMP that you see in your facility?
- Given some of the monitoring indicators for an effective HCWM plan, do you think the current plan in your hospital or facility is working?