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GLOBAL ENVIRONMENT FACILITY  
INVESTING IN OUR PLANET

GLOBAL HEALTHCARE WASTE PROJECT

# MODULE 24: Institutionalization of HCWM – Organization, Training, Financing and Quality Improvement

# Module Overview

- Describe the essential steps for institutionalizing a HCWM program
- Describe how training is an essential piece which complements other activities for effective program implementation
- Describe the costing tool to estimate capital, operating, and maintenance costs for HCWM
- Describe the principles of continuous quality improvement

# Learning Objectives

- Define key steps to institutionalize a HCWM program
- Define who to train, when, and why
- Use the costing tool to plan a budget for your HCWM program
- Understand the role of monitoring and reporting in improving your HCWM program

# Institutionalization

- Institutionalization involves incorporating healthcare waste management activities into the existing structure, operations and processes of the facility
- Institutionalization establishes HCWM as a part of the culture and normal practices of the facility staff
- Institutionalization sustains HCWM activities

# Steps for Institutionalizing a HCWM Program

- Determine the vision of a HCWM program
  - What are your goals?
- Create a healthcare waste management plan
  - Identify the people, practices, and procedures
  - List activities and time-lines
- Estimate the required operating budget for the year
- List the three to five ways to sustain and institutionalize the program
  - Employee buy-in, management buy-in, community support/education, recognition and awards, training, change the culture, monitoring and reporting

# Steps for Institutionalizing a HCWM Program

- Form a healthcare waste management committee
- Observe and report changes in practices related to healthcare waste management throughout the facility
- Ensure availability of funds for training, staff hire, equipment
- Monitor reduction in injuries, waste minimization, recycling programs, awareness among employees, management commitment

# Waste Management Philosophy

- Site-specific and based on a number of factors
  - facility location, regulatory requirements, available services, waste management alternatives, etc.
- A hospital's waste management program, like any other management and organizational effort, should be developed in accordance with the specific philosophy, values and beliefs of the institution:
  - Will the program be aggressive or passive?
  - Will the facility be proactive or reactive?
  - Will the facility be a leader or a follower?

# What is your vision?

- Give me 2-3 reasons why you want a HCWM program in your facility?
- How do you think this will change your facility?
- Are there particular goals?
  - Increase recycling by 10% in year 1
  - Train all staff in years 1 and 2
  - Purchase new safe devices



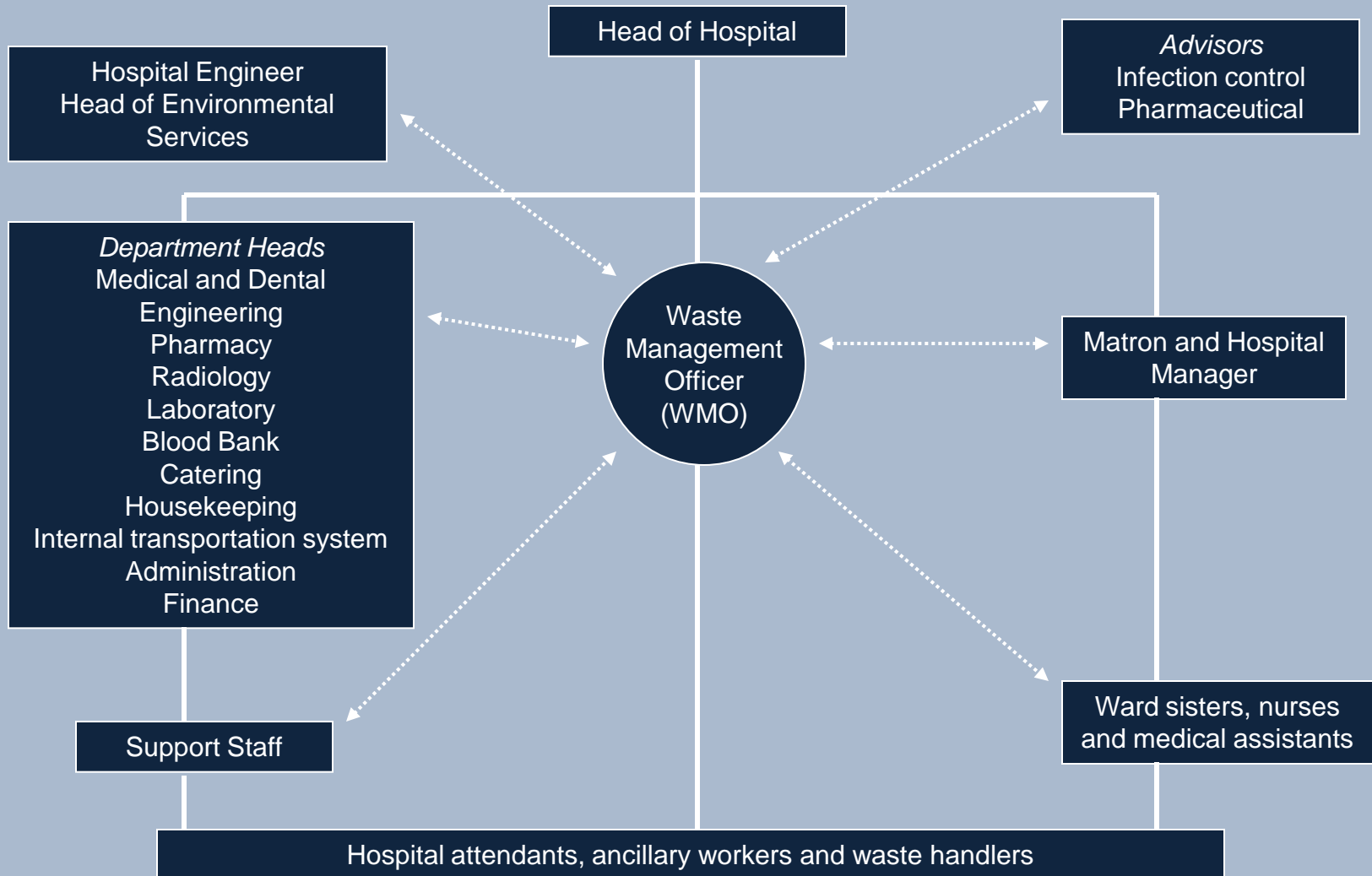
# HCWM Plan

- Do you currently have a HCWM plan?
- Did you conduct an initial assessment of your facility?
  - Can you share the results?
- Can you tell me what areas this plan covers?
  - Segregation, Transport, Treatment, Disposal, Minimization, Training, Contingency, Employee Health and Safety
- Are there any elements missing in the plan that you would like to add?

# Typical Waste Management Structure

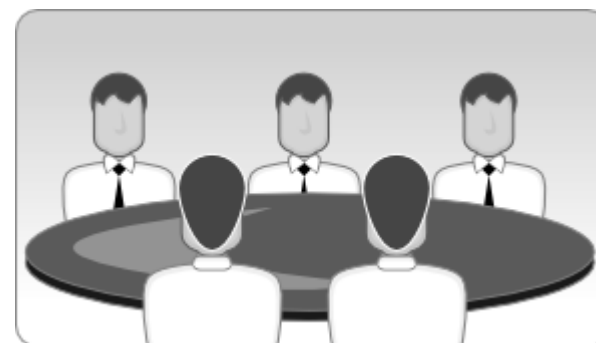
..... Liaison paths

— 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



# Waste Management Team

- Do you have a HCWM team?
- Can you list the members and their responsibilities?
- Do you think your team is adequately staffed to manage activities related to a HCWM program?
- Would you like to add more members?
- Do all members know their job?
- Do team members provide input to the HCWM plan?
- Do you have any employee representatives?
- How often do you meet?
- Whom do you report to?
- Do you have a plan to resolve issues related to HCWM? Give me an example.

# HCWM-related Activities

- Does your facility have the necessary resources and equipment to
  - Segregate waste → bins, bags
  - Transport waste → trolleys, carts
  - Treat wastes → autoclaves, needle destroyer
  - Store waste on site → central storage unit
  - Emergency response → spill kits, fire safety equipment

# HCWM-related Activities

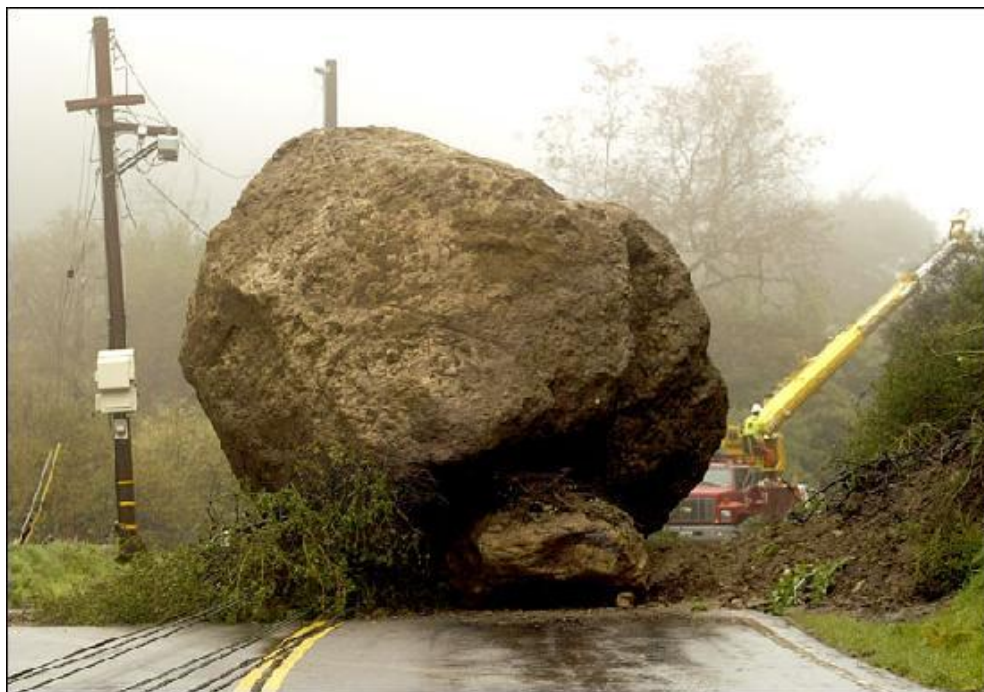
- Do you have meetings with staff in each ward or department on a regular basis?
- Do you have a system for conducting surveys and walkthroughs of wards or floors?
  - Who is responsible, frequency ,reporting
- What do you do when you observe a poor practice?

# HCWM-related Activities

- Do you have an OH&S committee?
- Do you have a protocol in place for employees to report injuries or incidents?
- Do you have a HCWM training program in your facility?
  - Topics covered, audience, frequency
- Do you think you have management commitment to implementing this HCWM program?

# Common Obstacles

- What are the organizational barriers to implementation of the HCWM in your facility?





# Training is Key

- HCWM cannot be effective unless it is applied carefully, consistently, and universally
- Training must be tailored towards the audience
- Training is critical for a HCWM program to be successful



# Why Train?

- To develop awareness of the health, safety, and environmental issues relating to healthcare waste, and how these can affect employees in their daily work
- To explain how each person contributes to a safe and sustainable waste management program

# Who Should Be Trained?

- All hospital personnel
  - Medical doctors, nurses, laboratory staff, other health professionals, cleaning staff, ward staff, waste handlers, administrative / clerical staff, hospital volunteers
- This will ensure collaboration in the implementation of such a program



# Basic Terminology and Principles of Training

- Needs assessment
  - Trainees, organization, regulation
- Competencies
  - Define your own, use existing competencies for the field, use locally relevant competencies
- Learning objectives for a program or course
  - Observable and measurable, list of desired knowledge/skill/ability, criteria for determining if objective was met
- Course design
  - Content helps achieve objectives, ensures adequate feedback from participants, cover training needs
  - Methods, tools, context (should be multiple methods and tools)\_
    - Methods - lecture, case studies, discussion, demonstrations, brainstorming
    - Tools - computer, flipcharts, handouts, organizational policies, regulations,
    - Context - small group activities, lecture hall, web-based, classroom, on-the-job, “toolbox”
  - Course materials - only hand out what participants are trained to use
  - Training environment-location, configuration (tables, chairs), lighting, access to resources, worksite
- Registration and recordkeeping
  - Who attended, what was covered, where was it done, for how long
  - Costs, who pays
- Evaluation strategies
  - Evaluation of students
  - Evaluation of course (by expert, participant, or third party), evaluation of output and impact
- Criteria for completion
  - Course completion, documentation, test, licensure, refresher training
- Trainer’s guide
  - Outline, learning objectives, prerequisites, scheduled time for instruction, required training aids and handouts, physical environment requirements, evaluation tools, list of reference materials

# Considerations When Developing a Training Program

- Needs of the participants
- Time constraints of the participants
- Convenience of the location
- Environment conducive to learning
- Organizational support
- Instructor knowledge and teaching skills
- Training content
- Pilot testing of training sessions
- Follow-up activities
- Evaluation

# Characteristics of a Successful Training Program

- Course has clear set of aims, defined competencies and objectives
- Course meets the needs of the participants as well as the objectives of the curriculum
- Course is constructed in a way that recognizes learning styles of participants (literacy, language, visual, aural)
- Participants value the aims of the training
- Participants attain the knowledge, skills, abilities and attitudes needed to implement the goals of the training
- Participants have ample opportunity to solve problems and to practice and apply the knowledge and skills
- Trainers are knowledgeable, respectful, and adaptable
- Evaluation and continuous improvement are integrated into the program

# Training Content Should be Tailored to the Audience

- Definitions, Sources and Characteristics of Healthcare Waste
- Health and Environmental Impacts of Healthcare Waste
- International and National Healthcare Waste Management Laws
- HCWM Planning in a Healthcare Facility
- Worker Health and Safety
- Classification of Healthcare Waste
- Segregation of Healthcare Waste
- Healthcare Waste Minimization
- Healthcare Waste Handling and Collection
- On-Site and Off-Site Transport and Storage of Healthcare Waste
- Treatment and Disposal of Healthcare Waste
- Management of Specific Wastes Streams
- Contingency Planning & Emergency Response to Healthcare Waste Spills
- Management of Healthcare Wastewater
- Institutionalization of HCWM
- Hospital Hygiene, Infection Control and HCWM



# Targeted Audience

- Separate training activities should be designed for four main categories of personnel:
  - Hospital managers and administrative staff responsible for implementing regulations on healthcare waste management
  - Medical doctors
  - Nurses, nursing assistants, lab technicians, and allied professions
  - Cleaners, porters, auxiliary staff, and waste handlers





# Frequency of Training

- Orientation for new employees
- Orientation for existing employees with new responsibilities
- Update knowledge in line with policy changes
- Periodic refresher training

# Different Modes of Delivery

- Duration
  - Half-day, one-day or two-day training programs
  - Short sessions once a week for several months
  - Three-day or one-week comprehensive training programs
- Type of training
  - Classroom-style training
  - Hospital-based training
  - Small group instruction
  - Self-instruction (using printed material, CD, video or Internet-based learning) with self-evaluation
  - On-the-job training, teaching by example, mentoring
- Possible host training institutions: hospital or healthcare facility program, Ministry of Health training program, local university, health professional association, syndicate of hospitals, commercial training company, training associated with a health conference, training funded by a national organization, training sponsored by an international organization or donor

# Trainers

- Commitment to aims of the course
- Expertise in the content
- Training delivery skills
  - Applying adult learning principles
    - Treat trainees with respect, recognize and respond to individual learning styles, manage difficult situations or participants, be flexible in tone and pace, encourage active participation from all trainees
    - Provide adequate feedback to participants
  - Course platform experience

# Ideal Characteristics for a Trainer

- Has knowledge, skills and experience in the subject matter
- Willing to enhance one's teaching skills, constructively self-critical
- Confident, self-motivated and mature
- Able to express ideas clearly
- Well-organized, sensitive to time
- Creative and flexible
- Friendly, has a good sense of humor

# Tips for Trainers

- Set the tone for the training at the start
  - Come early, greet all participants and introduce yourself
  - Use “ice breakers”: activities that allow participants to get to know each other and feel comfortable
  - Set ground rules, e.g., participants should keep an open mind, everyone should participate, give priority to those who have not spoken, start on time, listen to what others are saying, value all responses, respect one another

# Tips for Trainers

- Develop good facilitation skills
  - Interactive training is more effective than lectures
  - Actively engage participants by drawing out their ideas and encouraging questions and sharing of experiences
  - Be brief to allow participants time to respond
  - Use open-ended questions that encourage discussion
  - Know how to respond to incorrect answers without embarrassing the participant
  - Be honest if you do not know the answer to a question
  - Paraphrase: listen and summarize what participants said to emphasize or clarify points, review the progress of the discussion, and acknowledge the input of the participants

# Tips for Trainers

- Know how to handle difficult situations
  - Individuals who dominate discussions and prevent others from contributing
  - Participants that do not respond
  - Discussion that moves to irrelevant topics
  - Participants that carry on a distracting side discussion
  - Interpersonal conflict between two or more participants
  - Discussions that go too long
  - Presenting sensitive or controversial topics

# Principles of Adult Education

- Adults want to understand WHY something is important
- Adults have different learning styles: some prefer visuals, others are auditory, others need to do something to learn
- Adult learning is experiential
- Adult learning is enhanced by positive and encouraging feedback
- Adults learn by solving problems relevant to their reality
- Adult education should be participatory and interactive



# Training Techniques

- Experiential Training is an approach to individual and group learning that engages people, using action, reflection, application, and performance support.
- Lectures (the least effective technique) should be supplemented by:
  - Small group discussions that apply theory to their actual work situation
  - Activities such as developing action plans specific for their work place
  - Collaborative problem solving of real problems in the facility
  - SWOT analysis of existing policies or practices in their facility
  - Field visits and walkthroughs of health facilities
  - Demonstrations, hands-on simulation and games
  - Role playing to practice segregation or learn new skills
  - Formal or informal discussions to reflect on experience-based learning
- Training can also be supplemented by:
  - Mentoring from senior staff
  - Reflective supervision with a supervisor or consultant
  - Additional on-the-job training

# Tools and Resources for Training

- Training materials should be designed according to the needs of specific audiences
  - E.g., waste handler and cleaning staff may learn better using graphics and pictures rather than text-heavy slides
- Basic training tools
  - Slides, computer/LCD projector or overhead projector, flip chart, colored markers, hand-outs, writing materials for the participants, name badges
- Other useful materials
  - Sample segregation posters; videos and narrated PowerPoint presentations; PPE, clean-up kits and waste segregation equipment for role playing and hands-on simulation, case studies for discussion
- Resources from the UNDP GEF Project ([www.gefmedwaste.org](http://www.gefmedwaste.org))
  - Core competencies for HCWM
  - Sample curriculum
  - Training modules (PowerPoint slides) and exercises
  - Evaluation tools
  - Case studies

# Training of Trainers (TOT)

- TOT is an approach whereby master trainers teach knowledge, techniques and skills to trainees who then become trainers
- TOT is a popular technique because of the ability to reach out to large numbers of people

# Framework for a TOT Program

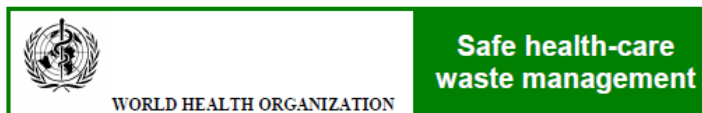
- Conduct a needs assessment, select master trainers and trainees, and develop a TOT curriculum
- Ensure the trainees' mastery of the content
- Impart training skills to the trainees and allow them to practice training skills in the classroom
- Let new trainers use their skills under supervision; evaluate and provide constructive feedback
- Provide ongoing support to trainers

# Financing HCWM

The establishment and sustained maintenance of sound systems for healthcare waste management depend on the availability of resources.

# Financing HCWM

- WHO Core Principles require:
  - That all associated with financing and supporting healthcare activities should provide for the costs of managing healthcare waste
  - That governments allocate a budget to cover the costs of establishment and maintenance of sound healthcare waste management systems
  - That donors and partners include a provision in their health program assistance to cover the costs of sound HCWM systems.



WHO core principles

for achieving safe and sustainable management  
of health-care waste

# Financing HCWM

- Steps to sustain HCWM efforts for the long run by raising financial resources
  - Estimate required funds
  - Find funds
  - Set up a specific budget line
  - Calculate costs based on initial data
  - Ensure financial sustainability
  - Finance monitoring events
  - Promote coordinated regional approaches
  - Create financial incentives



# General Cost Components for HCWM

- **Capital costs**
  - Initial capital investments
  - Amortization over the effective life of the plant or equipment.
- **Operating and maintenance costs**
  - Long-term recurrent costs:
    - Operating costs for labor and consumables.
    - Utility requirements (fuel, electricity, water, etc.).



# Specific Cost Items for HCWM

- **Capital costs items could include:**
  - Waste management equipment such as plastic or metal bins, wheeled carts, trolleys, weighing scales, skips or dumpsters, compactors, segregation posters
  - Site preparation, and construction or renovation of storage areas and treatment areas
  - Treatment technology and related accessories
  - Shipment, customs fees, installation, start-up and commissioning of the treatment technology
  - Waste transport vehicles
  - Construction of trenches or burial pits for waste disposal

# Specific Cost Items for HCWM

- **Operating (recurrent) costs items could include:**
  - Wages and benefits for the HCWM coordinator, waste worker, treatment technology operator, waste transport vehicle driver, etc.
  - Consumable items, such as plastic bags, sharps boxes or disposable sharps containers, labels, cleaning supplies, uniforms, PPE, disinfectants
  - Fuel costs, such as diesel or gas for the treatment system and diesel or gasoline for the transport vehicle
  - Utilities: electricity, water, steam and other utilities used by the treatment system
  - Maintenance and repair costs, spare parts

# Specific Cost Items for HCWM

- Other costs items could include:
  - Administrative and project management costs
  - Staff training
  - Regulatory fees
  - Renting or leasing of equipment
  - Sewage treatment costs
  - Landfill tipping fees
  - Fees paid to an outside company to pick up, transport, treat and dispose of healthcare waste (for facilities that use a service provider)

# Create and Analyze an Annual Budget

- Use available costing tools
- Incorporate HCWM costs into the budget process
- Monitor budget variances
- Adjust operating targets to meet HCWM requirements



# Costing Analysis Tool (CAT)

The costing analysis tool (CAT) was created to help estimate and calculate costs relating to HCWM at national and healthcare facility levels.



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**Health-care waste management • Costing Analysis Tool (CAT)**

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**Health-care facility and country level**

# Expanded Cost Analysis Tool (ECAT)

- The expanded costing analysis tool (ECAT) is a modified version of the costing analysis tool (CAT) and provides more options and approaches than the CAT. It was created to help the user estimate costs related to HCWM at the healthcare facility, central treatment facility or cluster, and national levels.
- Versions ECAT-L, ECAT-M and ECAT-H are for low-income, medium-income and high-income countries, respectively.



**Health-care waste management • Expanded Costing Analysis Tool (ECAT)**

# Key Elements of the ECAT

- The annual costs of HCWM include both capital (or one-time) costs as well as annual operating (or recurrent) costs. The capital cost is converted to an equivalent annual cost using the standard discounting formula which takes into account the equipment life span and a discount or interest rate.
- The ECAT allows one or more treatment approaches: (1) treatment of waste on site at the healthcare facilities; (2) treatment of waste at central facilities or large hospitals to which waste from a cluster of healthcare facilities send their waste; or (3) a combination of the above.
- The ECAT has four treatment technology options for on-site treatment: (1) autoclave and sharps pit; (2) incinerator and lined ash pit; (3) needle remover, autoclave, and small pit; and (4) needle remover, incinerator, and lined ash pit. For centralized or cluster treatment, two options are provided: (1) transport vehicles, large autoclave, and shredder; and (2) transport vehicles, large incinerator, and ash pit.

# Demonstration of the ECAT

- Instructor show an example of the tool and the key entries



# Strategies for Financing HCWM

- Finding funds for both the initial capital and long-term recurrent costs requires investigating the different sources of funding available
- Include the facility's finance officer or treasurer and the procurement officer in the HCWM committee

# Strategies for Financing HCWM

- List what could be financed externally by partners
- Investigate to see how Inter-agency Co-ordination Committees could help mobilize external funds
- Discuss what internal mechanisms could be used to cover HCWM costs, such as additional charges on medical supplies for waste disposal

# Strategies for Financing HCWM

- Public funds are generally insufficient to pay for initial capital investments.
- Two additional options:
  1. Private funding
  2. Support from NGOs or international organizations in the form of a loan or grant



# Strategies for Financing HCWM

- Forming a consortium of healthcare facilities and negotiating a cost-sharing agreement may be an option for waste treatment and disposal
- Joining a “group purchasing organization” may reduce the purchase price of waste management equipment by increasing the bargaining power of buyers

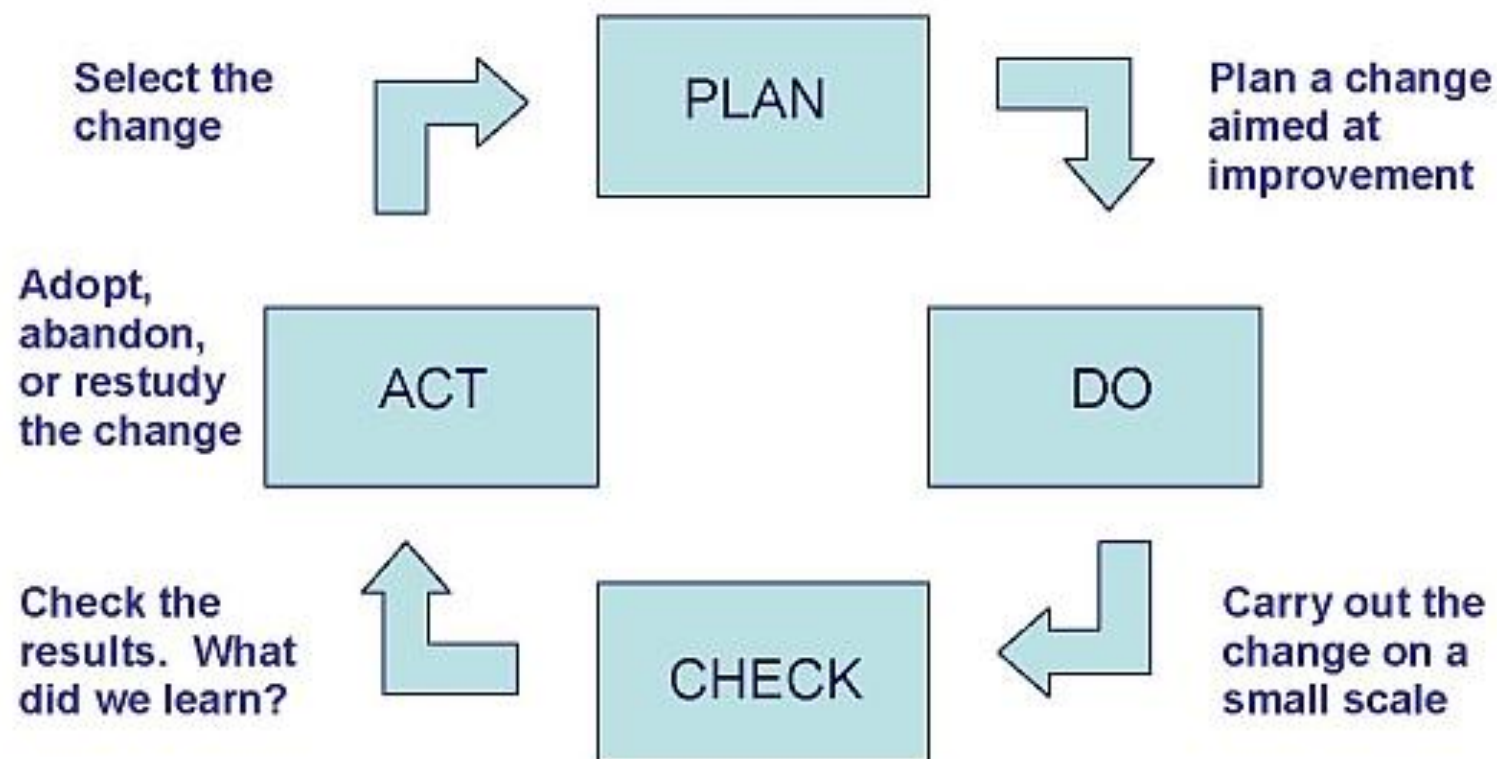
# Continuous Quality Improvement (CQI)

- Based on a management philosophy that most things can be improved
- A process of systematically improving services incrementally and increasing positive outcomes
- Cyclical, proactive and data-driven
- Focuses on “process” rather than the individual

# Continuous Quality Improvement

- **Analyze data periodically; update goals**
  - create new performance goals, new procedures, eliminate unsafe practices, training, etc.
- **Plan, do, check and act (PDCA)**
  - Plan: Establish a baseline, identify problems and causes, prioritize corrective actions
  - Do: Make changes to correct/improve situation
  - Check: Study effect of changes, compare to baseline
  - Act: If successful, continue to improve, make further improvements, identify further problems; if unsuccessful, use new improvement method(s)

# Steps in Continuous Quality Improvement



# Applying CQI to HCWM

- How do you know if your HCWM program is working?
- Quality improvement is a continuous process
  - Requires monitoring for quality, recordkeeping and updating goals



# Applying CQI to HCWM

- **Record waste production/disposal**
  - Also check performance of external agency responsible for off-site disposal
- **Report injuries and accidents**
  - Surveillance
  - Leave of absence
- **Report spills**
  - Are there too many accidents?
- **Report equipment performance**
  - Check for high energy costs, maintenance

# Applying CQI to HCWM

- **Quality of processes and procedures**
  - Conduct inspections, audits and surveys
  - Observe practices → e.g., check if recapping is done
  - Evaluate the supply chain → identify waste minimization options
  - Check performance of equipment
  - Interview employees and management for feedback
  - Update protocols and procedures as necessary
  - Define areas of improvement → improve training
  - Select, implement, and track most effective solutions

# Applying CQI to HCWM

- **Assessment of waste**

- Conduct baseline assessment of waste generated → volume, type, location
- Check compliance with local, national laws
- Evaluate reusable vs. disposable products
- Define areas for waste reduction
- Analyze cost of resources needed
- Implement collection and disposal system
- Evaluate effectiveness of systems in reducing and containing wastes

# Discussion

- How can you improve the effectiveness of your HCWM Committee?
- Conduct a SWOT analysis of your facility's training program.
- Can you analyze your facility's HCWM budget in relation to needs and projected expenditures?
- What are other sources of funding to support HCWM in your facility?
- How can you apply the principles of CQI to your HCWM system?