

MODULE A

One Day Training on Health Care Waste Management
(HCWM)

(For Management or Municipal Staff)

Submitted to:

Promoting Green Recovery Project (PGRP)
United Nations Development Programme (UNDP)
Nepal

Submitted by:



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Normative References

This Training Module has been produced for delivery of one day training (on-site) for the health care waste management for Management or Municipal Staff. The following mentioned documents have been used as references for the preparation of this document.

- Master Training of Trainers (MToT) training package on Environmental Health, Health Care Waste Management and WASH Developed by NHTC, Teku.
- National Healthcare Waste Management Standards and operating Procedures 2020, MoHP (2020)

Name of the Training: 1 Day Training on Health Care Waste Management (HCWM)
(For Management Staff or Municipal Staff)

Objective of the Training

- Understand the concept of integrated management of healthcare waste including the responsibilities of management committee.
- Gain knowledge on appropriate health care waste management in relation to Zero waste concept, waste minimization and entire waste management cycle; waste generation, classification, segregation, storage, transportation and treatment methods.
- Gain insight about waste treatment and disposal methods including new technologies and selection of treatment method.
- Understand National Standard for WASH in HCFs and WASH FIT.

Target Participants:

The target participants of the training are management staff of the HCFs and the local level authorities involved with health care waste management.

List of Acronyms

EH	Environmental Health
HCF	Health Care Facility
HCW	Health Care Waste
HCWM	Health Care Waste Management
NHTC	National Health Training Centre
PPE	Personal Protective Equipment
SOP	Standard Operating Procedure
SWM	Solid Waste Management
WASH	Water, Sanitation and Hygiene
WASH FIT	Water and Sanitation for Health Facility Improvement Tool

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Module Session Plan

This module has been divided into 5 sessions as in Table 1.

*Table 1:*Module Session Plan

<i>SESSION</i>	TOPIC	Time duration
<i>SESSION 1</i>	INTRODUCTION OF HCWM AND ITS INTEGRATED MANAGEMENT	30 Mins
	1.1 Introduction of HCWM	
	1.1.1. Situational Analysis of Health Care Waste Management in Nepal	
	1.1.2. National commitments for sustainable management of Environment Health, HCWM and WASH	
	1.1.3. Good Governance System for HCWM and WASH	
	1.1.4 Regulations, Policy, Guidelines, Directives of HCWM	
	1.2 Integrated Management of HCWM	45 mins
	1.2.1 Plan for Integrated Management of HCWM	
	1.2.2.Ensuring Integrated HCWM Structure and Staffing Arrangements	
	1.2.3 Responsibilities of Local Government and HCFs	
	1.2.4 Implementation of HCWM Plan	
	1.2.5 Roles and Responsibilities of Different Bodies in implementation	
	1.2.6 Regulation, Monitoring and Evaluation	
<i>SESSION 2</i>	APPROPRIATE HEALTH CARE WASTE MANAGEMENT	45 Mins
	2.1.1Concept of Zero Waste, Waste Minimization and Circular Economy	
	2.1.2 Definition of Health Care Waste and its Sources	
	2.1.3 Classification of Health Care Waste	
	2.1.4 Waste Segregation, Collection & Transportation	
	2.1.5 Types of Waste Treatment and Disposal Methods	
	2.1.6 Selection of Treatment Methods	
	2.1.7 Introduction to new technologies	
	2.1.8 Steps for implementation of Health Care Waste Management System in HCF	
<i>SESSION 3</i>	WASH IN HCFs	30 Mins
	3.1 National Standard for WASH in HCFs	
	3.2 WASH FIT	
<i>Session 4</i>	HCWM DURING AN EMERGENCY	15 Mins
	Total Time Duration	2 hours 45 Mins

SESSION 1: INTRODUCTION OF HCWM AND ITS INTEGRATED MANAGEMENT

Objective: The main objective of this session is to understand the situation of health care waste management in Nepal and its integrated management.	TRAINING TOOLS <ul style="list-style-type: none">• Presentation• Video Display	Time 30 Mins + 45 Mins
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Overview: By the end of the session participants will:

- Understand existing institutional status and practices of HCWM
- Understand the national 12 commitments for sustainable HCWM
- Gain insights on the existing national legislation, policy and strategies and existing national guidelines and directives on HCWM
- Be able to plan for integrated management of HCW
- Know the responsibilities and HCFs and local government
- Gain insight on implementation, regulation, monitoring and evaluation during integrated HCWM

1.1: Introduction of Health Care Waste Management

1.1.1 Situational Analysis of Health Care Waste Management in Nepal

Videos related to Health Care Waste management (HCWM) and WASH in Nepal and Water Sanitation and Hygiene (WASH) in Health Care Facilities (HCFs) to be displayed.

Some of the video links that can be used as a resource material during session:

Healthcare Waste Management and WASH in Nepal (by GIZ Health Nepal):

<https://www.youtube.com/watch?v=uplhe6mbDuc>

1.1.2 National Commitments for Sustainable Management of EH, HCWM and WASH

In Nepal, laws and policies related to the EH/HCWM/WASH have been formulated at different times, but compliance with those laws and regulations and implementation is one of the main challenges. In this regard, an integrated EH/HCWM/WASH management package has been prepared by National Health Training Centre (NHTC).

First Workshop on Environmental Health, Health Institutional Waste Management, Drinking Water Sanitation and Hygiene was organized on 24-26 December, 2076 in Kathmandu. To ensure the sustainable management of EH/HCWM/WASH, following 12 commitments were made during workshop.¹

1. WELL-ALIGNED POLICY FRAMEWORK FOR HEALTHCARE WASTE MANAGEMENT & WASH: The federal government will formulate medium- and long-term strategies for the sustainable management of Environmental Health, Waste Management, and Water, Sanitation and Hygiene (WASH) in healthcare facilities, including all necessary acts, policies, rules and standards as well as appropriate methodologies, technologies and equipment. Provincial and local governments will adapt these policies and guidelines to their own contexts, taking care not to contravene federal laws. The federal government will play a coordination and facilitation role in implementation.
2. A HEALTHCARE WASTE MANAGEMENT CAMPAIGN: A roadmap for healthcare waste management will be prepared and implemented as a campaign.
3. INTEGRATED APPROACH, WITH WASTE SEGREGATION AT SOURCE AND NO-BURN TECHNOLOGIES The practice of proper segregation at source, as per approved standards; disposal of infectious waste only after disinfection through the use of appropriate non-burning technology; and a model of Integrated Healthcare Waste Management will be developed and scaled up gradually, based on best practices.
4. COLLABORATIVE FRAMEWORK, WITH ENHANCED COORDINATION AT ALL LEVELS: Develop a collaborative framework which brings together stakeholder ministries, organizations and agencies working on Environmental Health, Healthcare Waste Management, and Water,

Sanitation and Hygiene in healthcare facilities. A separate unit and/or responsible person will be assigned for implementation, monitoring, evaluation and regulation at federal, provincial and local levels, as necessary.

5. OCCUPATIONAL SAFETY AND SOCIAL PROTECTION: Promote occupational safety and social protection measures for service providers, professionals and people involved in waste management.
6. A PILOT INFORMATION SYSTEM: Develop, pilot and scale-up a model information system on Healthcare Waste Management and Water, Sanitation and Hygiene in hospitals and healthcare facilities.
7. MANDATORY WASTE MANAGEMENT AND WASTE AUDITS: Ensure that a waste management system and waste audits conducted by skilled personnel are mandatory elements during the establishment, operation, renewal and upgrading of healthcare facilities.
8. INVESTMENT IN HUMAN RESOURCE CAPACITY: Coordinate, collaborate and partner with the three tiers of government and the private sector to promote the capacity building and management of skilled human resources in Environmental Health, Healthcare Waste Management and Water, Sanitation and Hygiene in healthcare facilities.
9. CLIMATE CHANGE ADAPTATIONS IN THE HEALTH SECTOR: Promote climate change resilience measures in health programmes to reduce the adverse effect of climate change on public health.
10. ADHERENCE TO 4R PRINCIPLES (REFUSE, REDUCE, REUSE, RECYCLE): Scale up good practices, lessons learned and cost-effective programmes which follow the 4R principles (i.e. Refuse, Reduce, Reuse, Recycle) and will discourage the use of plastics and related products.
11. MAINSTREAMING ENVIRONMENTAL HEALTH, HEALTHCARE WASTE MANAGEMENT & WASH Consider aspects related to Environmental Health, Healthcare Waste Management, and Water, Sanitation and Hygiene in the design and planning of all healthcare facility related programmes, bearing in mind the responsibilities of the three levels of government and following the principles of coordination, collaboration and co-existence.
12. RESEARCH AND INNOVATION: Promote studies, innovation and research, and prioritize the use of evidence which is generated in this sector.

¹ Birdsall, K. (2020). No Time to Waste - Transforming healthcare waste management for a healthier, more sustainable Nepal. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Eschborn, Germany

1.1.3 Good Governance System for HCWM and WASH

It is necessary to make the health care facilities and local government responsible and accountable for monitoring quality of water and air along with determining the quality criteria, as listed in the work descriptions of the federal, state and local government approved by the cabinet. Responsibilities of health care facilities and representatives of local government along with their staff are as follows:

1. Prepare and follow the policy, guidelines, standards and other documents on health care waste management and WASH related infection prevention and control to regulate, monitor, evaluate, keep records and publish periodic reports.
2. Monitor, study, research and regulate the health effects of various infections caused by polluted air, water and unmanaged waste.
3. Manage disposal of waste from local level or local level health care facilities institutions as well as factories.
4. Assist local level, provincial level and Ministry of Health and Population in preparing national laws, policies, rules, standards and protocols on HCWM and WASH.

1.1.4 Regulations, Policy, Existing National Guidelines and Directives on HCWM/WASH

Nepal has endorsed policies, acts, rules and regulations related to HCWM, that hold health care facilities accountable to their responsibilities regarding the management of health care waste. The relevant documents are outlined in the following.

The Constitution of Nepal 2015/2072

Regarding the protection of human rights, Section 35 of the constitution states that every citizen shall have the right to seek basic health care services from the state and have right to access to clean water and sanitation.

Section 30 ensures the right to clean environment. It states that every citizen shall have the right to live in a clean and healthy environment. For any injury caused from environmental pollution or degradation, the victim shall have the right to obtain compensation, in accordance with law. This Article shall not prevent the making of necessary legal provisions for a proper balance between the environment and development.

National Health Policy 2019/2076

Ministry of Health aims to improve the health care waste management system by endorsing Outcome 2 “Improved Quality of care at point of delivery” of the Nepal health sector strategy Implementation Plan 2016-2021, with one of the outputs being ‘Improved infection prevention and health care waste management’. Intervention activities such as ‘review and revise infection prevention and health care waste management and promote state non-state partnership models for waste management’ are listed as key activities for achieving the planned outputs.

Public Health Services Rules, 2077 (2020)

Article 3 of the rules provides for the provision of health care at various levels. As per Rule 11, the main responsibility of the Ministry will be to ensure compliance with the standards mentioned in Schedule 8 in various health institutions. These include environment, infection prevention and

control, health institutional waste management and water and sewerage in health institutions. According to Rule 12, in order to get and renew a new license, every health institution has to follow certain quality criteria. It is monitored and evaluated by the public health authorities and if the standards are not followed, the authorities may ask the health institution to comply with the standards or recommend action to the concerned authorities.

The Environmental Protection Act 2076 and Environmental Protection Regulation 2077 (2020)

The Environmental Protection Act 1997 were formulated to reduce adverse impacts on the environment likely to be caused from environmental degradation on human beings and ensure the proper use of natural resources for environmental conservation.

Environmental Protection Regulation 2077 have made compulsory provisions for Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA), depending upon the size of the project. According to the regulation, IEE is required for the construction of a new hospital with 25 to 100 beds with teaching facilities whereas Environmental Impact Assessment(EIA) is made mandatory for the construction of new Hospitals with teaching facilities having more than 100-beds.

Nepal Health Sector Strategy 2015-2020 / 2072-2076

The national strategy responds to a national aspiration to fulfil a constitutional mandate by offering defined strategies to expand quality health services to all.

Minimum Service Standards for Different Level of HCF in Nepal 2019/ 2076

In 2076/2019, the Nepali government created five documents outlining the minimum service standards for different levels of healthcare facilities, specifically primary hospitals with general services, primary hospitals with specialized services, secondary hospitals, tertiary hospitals, and health posts. These standards cover a range of issues for health care facilities; “hospital waste management” is clearly addressed in the section “Hospital Support Services,” with a checklist for evaluating a hospital’s waste management system, including a scoring system for the segregation, collection and transportation, treatment and disposal of waste for the different levels of healthcare facilities.

Public Health Act 2018/2075

Public Health Act 2018 addresses the issues of health care waste management in section 41:

For the minimization of the potential health hazards in humans due to environment pollution and waste management, Nepal government can make required standards according to the relevant federal legislations. Nepal government will develop essential standards for the effective collection, reuse, treatment, disposal and enforcement of the health care waste. Provincial and Local government are responsible to follow the above sub section 1 and 2. Every health care facility is responsible for proper segregation of waste into hazardous and non-hazardous and proper disposal of the health care waste generated.

The Labour Act 2017/ 2073

The Labour Act 2017, administered by the Ministry of Labour is the main regulation governing the working environment by making provision for the rights, interests, safety and insurance of workers and employees working in various enterprises. Section 80 is related to the management of infectious

disease transmission in working environment and section 68 states the need of Health and safety regulation and working unit within the working place

The Industrial Enterprises Act 2073/2016

The industrial enterprises act 2016 highlights the need to conduct Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE) before establishment. This Act also states that the responsibility of the safe management of the waste lays with the entity that generates the waste. Furthermore, the act has empowered the concerned authority to punish those who do not comply with the conditions outlined in the license or registration section. The act gives priority and the provision of some benefits to those that use pollution control devices, or enterprises which process the waste into resources (i.e. recycling, upcycling).

Guideline for Health Institutions Establishment, Operation and Upgrade Standard 2014/2071

This guideline contains the code of conducts required for the operation of health institutions. This guideline deals with the infrastructure and standards required for the operation of health institutions like emergency services, outpatient department and in-patient services, pharmacy, emergency preparedness, waste disposal and management and all other prerequisites.

Solid Waste Management Act 2011/2068

Solid Waste Management (SWM) Act 2011 with amendments made in Kartik 2074 BS, provides legal basis and regulation for HCWM in health institutions.

Section 4 sub-section 1, 2 and 3 states the responsibility of the management of the solid waste as given below:

- i. The responsibility to manage or cause to manage solid waste shall rest with the local body
- ii. Notwithstanding anything contained in sub-section 1, the responsibility for processing and management of hazardous waste, medical waste, chemical waste or industrial waste under the prescribed standards shall rest with the person or institution that has generated the solid waste.
- iii. If any industry or medical institution requests for the management of solid waste remained after processing of hazardous waste, medical waste, chemical waste and industrial waste or other solid waste, or for using a sanitary landfill site constructed by the local body, the local body may manage the solid waste or allow the institution to use the sanitary landfill site by levying fees as determined by the local body.

Drugs Act 1978/2035:

Pursuant to Section 12, this Act mandates the return of drugs that are not safe for public consumption (including by virtue of expiration date), that are not efficacious, or that do not meet quality standards. It is the manufacturer or an agent of the manufacturer that must take back such pharmaceuticals from the seller or distributor.

National Healthcare Waste Management Standards and Operating Procedures, 2020

The “National Healthcare Waste Management Standards and Operating Procedures, 2020” covers all aspects of HCWM such as development of HCWM implementation plan, management and oversight

and technical aspects related to waste management such as waste minimization, waste segregation, collection, storage, transportation, treatment, disposal and capacity-building and awareness creation.

Healthcare Waste Management Standards 2077(2020)

Healthcare Waste Management Standards 2077 has been prepared with objective of safe management of healthcare waste at all level of health institutions

National Standard for WASH in Health Care Facilities (HCF) 2078

As per the National standard for WASH in Healthcare Facilities for Healthcare Waste Management following principles have been mentioned:

- i. health organizations at all levels must follow National Healthcare Waste Management Standards and Operating Procedures, 2020 for Health care waste Management
- ii. In an appropriate place, colored waste bins with proper labelling should be provided.
- iii. Waste should be treated and managed in a safest (non-flammable) condition as possible. Schedule-14 must be complied for proper waste management.
- iv. Waste must be collected in a safest way and managed properly without affecting public in a designated waste collection center
- v. The floor and environment of the health system should be free from wastes
- vi. Employees should have adequate waste management equipment and personal safety equipment and should be provided with the means to safely collect and dispose of health-related waste
- vii. The head of the health organization, the concerned health workers, the authorized persons, the members of the health organization waste management committee and the concerned officials shall assume the responsibility of the health organization waste management.
- viii. Rainwater and surface water shall be safely stored in the health facility and in the surrounding external environment without any pollution.

Health Care Waste Management in the context of COVID-19 Emergency (Interim Guidance) (2020)

This guideline covers, Safe management of the waste generated in connection with all suspected and confirmed COVID-19 cases, both symptomatic and asymptomatic in different levels of health care facilities, isolation centers, quarantine centers including hotels, home quarantine and holding areas like port of entry from other countries. This guidance is considered as interim since many researches are going on and hence, about the existence (duration of the activation) of this new corona virus in different environment including the waste, so these recommendations may need to be updated as new information and evidence become available (4).

1.2: Integrated Management of Health Care Waste

1.2.1. Plan for Integrated Management of HCWM

An integrated management plan for HCWM/ WASH must be prepared by all health care facilities. From the initial stage of the planning, HCFs must prepare and implement integrated management plan is the right method.

It is the responsibility of each health care facilities to prepare a suitable health care waste management plan as per the requirement.

Integrated HCWM plan can be prepared by the HCF itself or it can contract appropriate private organization or service providers.

To ensure a safe and sustainable integrated HCW management system, a concrete plan for its implementation along with monitoring and evaluation process should be prepared.

Types of plan:

A. Health Care Facility Based Plan:

Healthcare facility operation and management committee is responsible for integrated management of health, healthcare waste management and water sanitation and hygiene (WASH).

The following steps should be followed during planning:

1. Possible solution-oriented assessment of waste
2. Preparation of programs and activities with necessary budget.
3. Assign focal person or unit for implementation.
4. Estimation of waste management capacity and construction of infrastructure
5. Preparation of human resource development plan with capacity development indicator.

B. Plan at the local bodies:

Local bodies are responsible for proper implementation, regulation, monitoring and evaluation of health, healthcare waste management and water sanitation and hygiene (WASH).

1. Diagnostic analysis of environmental health, healthcare waste management and WASH at local level.
2. Formation of technical committee for HCWM/WASH at local level.
3. Preparation of programs and activities with necessary budget.
4. Adaptation and development of operating guidelines for health, healthcare waste management and WASH.
5. Management of hazardous waste at local level for small /rural municipalities.
6. Establishment of designated disposal site for hazardous waste in coordination with private sector in case of large municipalities.

1.2.2. Ensuring Integrated HCWM Structure and Staffing Arrangements:

1. Ensure department, unit or committee for integrated healthcare waste management and WASH.
2. Prepare program, budget, activities and implementation plan by department, unit or committee.
3. Prepare the Job description (JD) including the responsibilities and liabilities of the department, unit or committee.
4. Capacitate individuals / groups for the development of trained and skilled human resource.
5. Delegate the necessary rights to accomplish the given responsibilities

1.2.3. Responsibilities of Local Government and HCFs

Responsibilities of Local Government

The prospective functions and responsibilities for local government are as follows:

- Form local level health care waste management committee with necessary members nominated by the local government.
- Advocate and facilitate for formation of health waste management committees at HCFs within the local level and define the roles and responsibilities of committee members.
- Prepare and implement a upgrading plan focusing on measures to improve WASH systems in health care facilities in collaboration with the provincial government and supporting organizations
- Include healthcare waste management in the local level policy and strategic plan,
- Conduct health care waste assessment to understand the situation of the local bodies and install HCWM information systems
- Prepare integrated healthcare waste management strategic plan with adequate budget allocation at local level
- Establish monitoring and evaluation mechanisms including regular capacity building activities based on rules and regulations in health care facilities and local level
- To collect and treat HCW from health care facilities.

Responsibilities of Health Care Facilities

The entire organizational structure and services should be made accountable for proper management of HCWM and WASH. However, a certain unit within the health care facilities should be given the responsibility to maintain the HCW and WASH management system.

The works of the administration are listed as follows:

- Form a HCW/WASH management committee in the health care facilities with the help of the federal, state and local governments. Potential members (members can be added based on the level of the health institution and the health institution's own needs and opportunities) of such a committee may be as follows:

High Level Health Institutions – Hospitals

- Chairperson of healthcare facility operation and management committee
- Local Representative
- Head of healthcare facility
- Departmental Heads
- Matron
- Waste Management Officer and Trained Designated Person-Focal Person)
- Support staff representative (cleaners)

Medium level health facilities (health posts, clinics and others)

- Chairperson and representative of healthcare facility operation and management committee
- Head of healthcare facility
- Technical staff and trained focal persons
- Support staff (cleaners and workers)

- Establish and manage HCWM/WASH management Information system and based on preliminary data. This should include written guidelines covering all aspects of training and management methods
- Implement the management plan and revise the plan and guidelines reviewing it annually.
- Ensure compliance of rules and regulations related to management and mix the infectious waste to the local waste management system after treating with the recommended technology.
- Ensure adequate financial and human resources for implementation of the HCWM/WASH Management Plan (the authorized body to assist it can recommend for preparation of strategies to allocate adequate budget for health waste management).

1.2.4. Implementation of HCWM Plan

For the effective implementation of health, health waste management, plan, special attention should be given to the following technical aspects as well as the psycho-social and practical aspects:

Table 2: Implementation of HCWM Plan

Supervision and Support	Development of collaborative supervision materials, self-analysis questionnaire, supervision schedule, periodic backing.
Motivation	training, effective site observation, appreciation of performance, award management.
Communication	Development of proper effective communication system, ensuring regular and timely communication within the group, timely addressing the barriers of effective communication (to address its barriers for effective communication).
Coordination	Within the group, health, health waste management, drinking water sanitation and hygiene multi-stakeholders such as local level, health organization, support organizations.

1.2.5. Role and Responsibility of Different Bodies in Implementation

To maintain adequate health condition and overall healthy environment in the HCFs the role and responsibilities of the stakeholders are presented below:

Table 3 : Role and Responsibility of Different Bodies in Implementation

Individual/ Group/Institution	Roles and responsibilities
Health Service Recipients / Patients and their relatives, visitors	<ul style="list-style-type: none"> • Follow the standards on use and care of HCWM/WASH services / facilities and observe the hygienic behavior of the health workers. • Support the health care facilities to improve the lack and weaknesses related to WASH properly
HCF Operation and Management Committee or Local Level Committees	<ul style="list-style-type: none"> • Formulate and implement annual reform plan for improvement of HCWM/WASH to achieve and maintain the goals related to HCWM/WASH. • Actively and regularly implement the plan to achieve the goals related to HCWM / WASH and continuously work to attain the achievements. • Plan separate budget for HCWM / WASH activities. • Deploy separate staff for HCWM • Ensure presence of skilled human resource for necessary plumbing services in healthcare facilities. • Coordinate with local stakeholders.
Health Workers	<ul style="list-style-type: none"> • Follow the standards. • Bear HCWM/WASH related responsibilities on quality improvement plan of health care facilities • Take continuous initiatives to prevent transmission of communicable diseases, (like hand hygiene and management of healthcare waste disposal). • Monitor HCWM/WASH facilities and carryout necessary maintenance and improvement work • Inform and encourage the patients and their relatives/visitors to adopt appropriate hygienic practices. • Participate actively to achieve and maintain the goals set in the HCWM/WASH Improvement Plan
Head of Health Care Facilities	<ul style="list-style-type: none"> • Formulate and implement annual plan to achieve and maintain goals on HCWM/WASH • Ensure compliance with HCWM/WASH standards. • Organize orientations, seminars and trainings as required. • Coordinate and cooperate with the concerned local level stakeholders to improve the condition of HCWM/WASH and maintain sustainability.
Sanitation Staff / Janitor	<ul style="list-style-type: none"> • Maintain uniformity on works related to prevention and control of communicable diseases (HCFS sanitation, HCWM) and continue it effectively.

	<ul style="list-style-type: none"> • Work actively to achieve the objectives set in the HCWM/WASH promotion and improvement plan of HCFs.
National and international Supporting Organizations/bodies	<ul style="list-style-type: none"> • Provide necessary technical and financial assistance for adherence and implementation of HCWM/WASH related standards.
Communities in Coordination with Local Level Committees	<ul style="list-style-type: none"> • Participate in disease control and health awareness programs organized in the community. • Inform the concerned authority about the healthcare waste found around the HCFs and its inadequate management practices. • Support and promote HCWM/WASH related services and facilities provided by HCFs at the local level.

1.2.6. Regulation, Monitoring and Evaluation

Regulation

Health care facilities and local bodies should maintain records and reports in compliance with the standards of Health Care Waste Management and WASH.

Monitoring

Regular monitoring should be conducted to check if the activities related to Health Care Waste Management and WASH are being carried out as per the plan during the commencement of the work. Records and reports of the implementation plan, program and activities along with results and impact should be prepared by evaluating the process. Corrective response activities as required by the Health care facilities and local bodies should be developed and implemented on the basis of prepared records/reports

Evaluation

Evaluation should be carried out to check whether HCWM/WASH management has been done successfully or not with favorable/unfavorable return so it can be replicated in other facilities as well.

Measures needed for monitoring and evaluation,

- i. Develop a Monitoring and Evaluation Framework –
 - List of guidelines criteria,
 - supporting materials (diary forms),
 - operating procedures,
 - List or Instructions on integrated HCWM and WASH.
- ii. Actual Performance Measurement Framework.
 - Identify differences between pre-determined goals/plans and actual performance.
 - Analyze the reasons for performing the work in a different way.
 - Identify gaps in implementation.
 - Carryout corrective actions addressing gaps to achieve pre-determined goals

SESSION 2: APPROPRIATE HEALTH CARE WASTE MANAGEMENT

<p>Objective: The main objective of this session is to understand the concept of health care waste management and learn how the waste generated from the various health care setting can be managed in an environmentally friendly way identifying the best feasible treatment and disposal technology for various setting of health care wastes</p>	<p>TRAINING TOOLS</p> <ul style="list-style-type: none"> • Interactive Presentation • Group Discussion • Group Activities • Q &A 	<p>Time 45 Mins</p>
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Overview: By the end of the session participants will be able to

- Understand the concept Zero waste and waste minimization
- Understand the concept of circular economy and contribution of HC Professionals
- Understand precautionary principle to be followed during waste minimization
- Define HC waste, its sources and categories
- Brief different types of onsite and offsite treatment methods
- Understand different HCW treatment technologies
- Select appropriate treatment technology for treating different HCW generated within HCFs

2.1.1. Zero Waste Concept and Waste Minimization

Zero waste concept sets principles, which encourage the redesign of resource life cycles so that all products are reused with approaches of waste reduction, recycling, product substitution, circular economy.

Waste minimization is defined as both the prevention as well as the reduction of waste production. Waste minimization usually benefits the waste producer by reducing the costs for the purchase of goods. It involves specific strategies of changes in management and behavior. Waste minimization can be achieved through waste reduction at source (product substitution, product change, procedural change) and giving preference to recyclable and reusable items

The amount of waste generated is often governed by processes and behaviors at the workplace. Choosing reusable equipment over single use, sending e-mails instead of using letters or paper memos, using reusable cups over disposable ones etc. can lead to a minimization of waste. Thus, methods of waste reduction include modification of purchasing procedures, control of inventory and use of less toxic materials. However, no actions should be taken that would impact the quality and limit the access to health care. During infectious pandemic situation (e.g COVID-19) un-

necessary visiting isolation are and unnecessary use of PPE generated lots of extra waste, that could be optimized. (*National HCWM Standards and Operating Procedures- 2020*)²

The concept of circular economy envisions a system in which end-of-life products can be reused, recycled or reinvented into new useful products. Rather than a cradle-to-grave system, this emphasizes the cradle-to-cradle system which generates revenue and saves resources with minimum production of waste. It is aligned with the concept of zero waste. Core ideas of the circular economy idea are shown in Figure 2.



Figure 1: Flow chart with steps to achieve a circular economy
(Source: UNIDO,2017)³

2.1.2. Definition of Health Care Waste and its Source

Waste generated through all medical activities is termed as Health Care waste. Medical activities include activities such as diagnosis, preventive, curative and palliative treatments, research pertaining to the above activities and production or testing of biologicals.

Sources of HCW are:

- Hospitals
- Primary health care centers, health posts, sub-health posts, Expanded Programme on Immunization (EPI) clinics, primary health care outreach clinics (PHC ORC)
- Clinics (medical, primary health care, alternative medicines, dental, maternity homes, dialysis centers, physician offices)
- Laboratories and research centers (medical and biomedical laboratories, medical research centers and institutions, blood banks and blood collection centers, biotechnology laboratories, pathological laboratories, microbiological laboratories)
- Pharmacies and medical stores
- Institutions (medical, nursing home, dental, nursing, paramedics, drug rehabilitation centers, drop-in center)
- Veterinary hospitals and clinics
- Ambulance and emergency care
- Home based care

² National Healthcare Waste Management Standards and operating Procedures 2020, MoHP (2020)

³ UNIDO 2017, online at: https://www.unido.org/sites/default/files/2017-07/Circular_Economy_UNIDO_0.pdf

2.1.3. Classification of Health Care waste

Solid Waste Management Act 2011 defines health care waste as ‘waste generated from hospitals, clinics, pharmacies, blood banks, pathology laboratories, other health care institutions or research centers which can be hazardous to human health and environment’. Based on the various physical and chemical properties and hazards associated with the waste, HCW are broadly categorized into general HCW and hazardous HCW as shown in Table 1.⁴

Table 4: Classification of HCW

Health Care Waste (HCW)		
Non Risk HCW	Biodegradable	Biodegradable waste can be decomposed like leftover food, garden waste
	Non-Biodegradable	Non- Biodegradable waste does not decompose, but its large volume can be recycled. It includes bottles and cans, paper, different plastics and glass
Risk HCW	Infectious Waste	Infectious wastes consist of pathogens and its contamination poses a risk of disease transmission. This category includes waste contaminated with blood and other body fluids, laboratory cultures and microbiological stocks and waste including excreta and other materials that have been in contact with patients infected with highly infectious diseases.
	Sharp Waste	Sharps are all objects and materials capable of cutting or penetrating the skin. These wastes pose a potential risk of injury and infection due to their puncturing or cutting properties. Examples of such wastes include all types of needles, broken glass ware, ampoules, scalpel blades, lancets, cover slips, glass slides, vials without content.
	Pharmaceutical Waste	Pharmaceuticals that have passed their recommended shelf life or pharmaceuticals that are unusable.
	Cytotoxic Waste	Cytotoxic wastes can arise by use (administration to patients) or by manufacture and preparation of pharmaceuticals with a cytotoxic effect.
	Pathological Waste	Pathological waste consists of human body parts, organs and tissues. Examples of such wastes are tissue waste, removed organs, amputated body parts, placentas, blood, body fluids, human fetus, animal and carcasses obtained through medical procedures.
	Chemical Waste	Chemical waste is the waste with chemicals, which if managed or disposed improperly may pose substantial hazards to human health. It includes chemicals used in the laboratory, unused photo film, contaminants, solvents, batteries, broken thermometers and blood pressure measuring equipment
	Radioactive Waste	Materials contaminated with radionuclides, which arise from the medical or research use of radionuclides. It includes unused sealed radiation source, liquid and gaseous material contaminated with radionuclide, excreta of patients who underwent radionuclide diagnostic and therapeutic applications, paper cups, straws, needle syringes, test tubes and tap water used to wash paraphernalia.

⁴ - National Healthcare Waste Management Standards and operating Procedures 2020, MoHP (2020)







2.1.4. Waste Segregation, Collection & Transportation

Waste Segregation

Waste segregation refers to the separation of different waste at the source and keeping them apart during handling, collection, interim storage and transportation. Segregation of the waste at point of generation is very crucial for a successful management of HCW. It is highly recommended to segregate HCW on-site at the time waste generation, e.g. when an injection is given, needle and syringe are deposited in their respective, different waste containers.

To reduce the amount of infectious waste as low as possible, infectious waste should not be mixed with non-infectious waste. Separating risky waste from non-risk waste also significantly reduces the risk of infection for staff and healthcare workers dealing with HCW. A suggested way of distinguishing HCW categories is by sorting the waste into color-coded and well-labelled containers.

Table 5 : Recommended color-codes for the container, labelling and international signs for segregation of HCW (Source: National HCWM Standards and Operating Procedure-2020)⁵

Waste Category	Symbol and label
Non-risk HCW	Biodegradable
	Non-biodegradable
Risk HCW	Pathological waste  <i>Danger! Pathological waste</i>
	Sharps Waste  <i>Danger! Contaminated sharps</i>
	Infectious Waste 
	Pharmaceuticals waste
	Cytotoxic Waste 
	Chemical Waste   <i>Danger! To be discarded by authorized staff only</i>

⁵ - National Healthcare Waste Management Standards and operating Procedures 2020, MoHP (2020)



Danger! Radioactive Waste

NOTE: Color indicates the color of the waste collection container as per National HCWM Standards and Operating Procedure-2020

Waste Collection

Waste generated within the HCFs are collected in different sized color coded buckets or bins in accordance with type and quantity of waste. Waste collected are stored properly in utility room or temporary storage before it is transferred to final waste treatment area. If designated waste storage area is not available, infectious waste can be stored at the proper place away from patients and public areas.

Waste need to be collected and transported away in daily basis. Proper coded storage bins should be used for waste collection.



Figure 2: Waste Collection Bins, Bucket with Medication trolley and stand (Source: EcoConcern,2019)⁶

Waste Transportation

Health Care waste collection and transportation activities should be designed and planned to ensure safe movement of waste from point of generation to the storage and ultimately to treatment center. Proper plan should be prepared for collection and transportation of waste.

Recommendations to the staff involved in waste collection:

- Collect waste on room to room basis once every shift. In case of difficulty in the collection of waste in every shift, waste should be collected on daily basis (or as frequently as required) and transported to the designated central storage site of HCF.
- No bags should be removed unless they are labelled with their point of production (hospital and ward or department) and contents.
- The bags or containers should be replaced immediately with new ones of the same type.
- A supply of fresh collection bags or containers should be readily available at all locations where waste is produced.

Process for on-site and off-site transportation of waste should be included in the waste disposal plan of HCF.

⁶ Photo credit : Eco Concern Pvt. Ltd.

On-site transportation

Onsite transportation should be planned avoiding the busy and peak hours with higher flow of patients. During transportation of waste, segregated waste should not mix with each other and need to be managed in accordance with the level of risk of waste.

Wheel trolleys, containers and carts should be used to transport waste from point of generation to the collection area. Wherever possible, dedicated waste transportation route should be allocated for transportation of HCW to reduce the passage of loaded carts through wards and other areas. General waste and hazardous waste should be transported separately. Infectious waste can be transported with sharp waste but not with other hazardous waste

The trolleys or vehicles should be:

- Easy to load and unload.
- Have no sharp edges that could potentially damage waste bags or containers during the loading and unloading.
- Easy to clean.
- Easy to push and pull
- Appropriately sized according to the volumes of waste generated at a health-care facility.

For the transportation from source to collection point, there should be separate trollies for the transportation of risk and general waste. Trolleys and collection vehicles must be cleaned and disinfected daily using chlorine solution and phenolic compounds. The people transporting the waste should be equipped with appropriate protective equipment.

Offsite transportation

The waste produced from healthcare facility should be transported offsite for proper disposal and treatment. the HCW producer is responsible for safe packaging and appropriate labelling of the waste to be transported offsite as well as for the authorization of its destination i.e. CTF and need to be safely disposed at landfill site after proper treatment.

A fundamental requirement for vehicle transporting hazardous waste should be roadworthy and be labelled with information such as its load, and its payload for minimizing risk of accidents and spillages. The responsibility of transportation of solid waste from collection point to transformation center and up to waste management point lies to local government or organization or body assigned by local government as per the Solid Waste Management Act 2068(2011) with amendment version of 2074 kartik.

Central Treatment Center

In urban area most of the health facilities may not have the space required to set up treatment centers on their own premises. In such an environment, Central treatment center can be a good option for better management of health-related wastes. The Central treatment center will remain as a common center of treatment, regardless of whether the health-related waste treatment produced in the city is operated by a public body or the private sector. The cost of treatment and disposal depends mainly on the technology in use and the amount of waste accumulated in the central treatment center.

Some of the points to be taken into consideration while operating the Central Treatment Plant are as follows:

- i. Prior to the establishment and operation of such treatment center, the environmental impact assessment of the area should be completed and approval should be obtained from the concerned officials.
- ii. The central treatment center operated within the municipality should be owned by the municipality. Somewhere the central treatment center may have brought wastes from different levels. In such cases, the local level where the treatment center is located can take ownership of it. Ownership of such centers may be transferred to the private sector.
- iii. The Central treatment center may be operated in public, private, partnership model or by the municipality alone.
- iv. No Central Medical Hospital shall be established and operated in the premises of any health institution. Collecting potentially hazardous waste within health facilities should be strictly prohibited.
- v. The Central treatment center as a service provider may charge a fee from the health institution at the rate of quantity, weight or per bed.

2.1.5. Types of waste treatment and Disposal methods

The methods for treatment and disposal of HCWs depend on specific factors applicable to the HCF, relevant legislation and environmental aspects affecting the public. The bulk of HCW falls into the category of non-hazardous HCW, much of which can be recycled or reused. With correct segregation, low amounts of waste are categorized as risk HCW requiring specific attention. Hazardous waste and infectious waste must be treated with approved treatment methods. Once treated, the waste may be re-classified for disposal. As technology changes, HCFs should evaluate treatment alternatives regarding their safety, effectiveness, environmental impacts, costs and compliance with the country requirements.

Table 6: Techniques currently available for the treatment and disposal of HCW

Biological Procedures	Composting	Composting is the natural, biological decomposition of organic matter by fungi, bacteria, insects, worms and other organisms. Successful composting entails the management of the decomposition process so that it is relatively quick, safe and clean.
	Vermi composting	Vermicomposting is the process of degradation of biodegradable matter through worms. The specialized worms used can speed up the digestion process through the vigorous digestion of the materials.
	Anaerobic Digestion	During anaerobic digestion biodegradable waste is degraded in absence of oxygen. The process occurs due to anaerobic organisms, which results in production of methane as a by-product.
Steam-based treatments:	Autoclaving	Autoclave is a process of steam sterilization under pressure. It is a low heat process in which steam is brought into direct contact with the waste material for a sufficient duration to disinfect the material. This technique has been used for a long time in HCFs for sterilization of reusable medical equipment.
	Microwave	Microwave treatment is a steam-based treatment technology where microwave energy generates moist heat and steam by heating the moisture in the waste. Microwave radiation is used for the treatment of the infectious HCW.

	Frictional Heat Treatment	Frictional Heat Treatment: This technology uses both steam as well as dry heat. Highspeed rotating shredders generate heat and the moisture in the waste turns into steam. Such technologies can achieve an up to 80% decrease in volume reduction When all fluids have evaporated. The system capacity ranges from 10 kg to 500 kg per hour.
	Integrated steam-based treatment system	Integrated steam-based treatment system: The integrated steam-based systems combine internal shredding, steam treatment-mixing and drying in a continuous unit. Since most autoclaves and hybrid autoclaves operate in batch processes, these technologies are sometime referred as advanced steam treatment technologies treating waste in continuous process (WHO 2014)
Chemical treatment	Chemical Disinfectants, Alkaline hydrolysis, Chemical decomposition are Chemical treatment methods.	
Burial based Disposal Methods	Encapsulation and Inertization	Encapsulation and Inertization: Encapsulation involves the filling of the containers with waste, adding an immobilizing material and sealing the container. The process uses either cubic boxes made of high- density polyethylene or metallic drums. When containers are three quarters filled with sharps, pharmaceuticals and chemical waste, an immobilizing agent such as plastic foam, bituminous sand, cement mortar or clay is poured into it. The material dries and the container is sealed and disposed safely.
	Inertization	Inertization: In this technique, HCW is mixed with cement and other substances in a composition of 65% waste, 15% lime, 15% cement and 5% water. The formed mixture is allowed to set into cubes or pellets and then is transported to a suitable storage site.
	Sanitary landfill	Sanitary landfill: Sanitary landfills are an engineered method, designed and constructed to keep the waste isolated from the environment. There should not be any contamination of the soil, surface, and ground water.
	Burial	Burial: Hazardous waste can be buried in a special pit. For this purpose, the pit should be 2-5 m deep and 1-2 m wide. The bottom of the pit should be at least 2 m above the water table. After each waste load, it should be covered with a 10–30 cm thick soil layer. If coverage with soil is not possible, lime may be deposited over the waste. When the level of the waste reaches up to 30 to 50 cm to the surface of the ground, the pit needs to be filled with dirt, sealed with concrete and a new pit should be dug if necessary.
	Septic or Concrete Vault	Septic or Concrete Vault: This method can be used for the disposal of used sharps and syringes. In this method a concrete pit of slabs of (1m x 1m x 1.8m depth), is constructed to accommodate sharps and syringes for certain period without contaminating the ground water level.

2.1.6. Selection of Treatment Methods

According to the Solid Waste Management Act, 2068, treatment and management of hazardous health waste, chemical waste or industrial waste is the responsibility of the producer. Therefore, the responsibility of managing health care waste lies with the head of the health institution. The following table shows the appropriate treatment technologies for treating various health care wastes.

Table 7: Treatment technologies for treating various health care wastes

Waste Treatment Method	Infectious Waste	Sharp Waste	Pathological Waste	Chemical Waste	Pharmaceutical Waste	Cytotoxic Waste
Biological Procedure	X	X	✓	X	X	X
Autoclave	✓	✓	X	X	X	X
Microwave	✓	✓	X	X	X	X
Chemical Treatment	✓	✓	X	✓	X	✓
Encapsulation and Inertization	X	✓	X	✓	✓	✓
Sanitary landfill	✓#	✓*	X	✓*	✓*	✓*
Burial	✓#	✓#	✓	X	X	X
Septic or Concrete Vault	✓#	✓	X	X	X	X

* After Encapsulation # After Sterilization

2.1.7. New Treatment Technologies

Suitable selection of technology is a very important step for the successful implementation of a health care waste management system. Especially emerging technologies should be carefully reviewed prior to installation and operation. Some of the examples of emerging technologies are plasma pyrolysis, superheated steam, ozone and promession.

Plasma pyrolysis: Plasma pyrolysis involves plasma arc torches or electrodes which use ionized gas in the plasma state to convert electrical energy to super high temperatures, up to several thousand degrees Celsius.

Superheated steam: This technology uses superheated steam at 500°C to pulverize infectious, hazardous chemical or pharmaceutical wastes. These steams are further heated up to temperatures of 1500°C.

Ozonization : Ozone (O₃) gas can be used as a disinfecting agent for waste. Ozone (O₃) can break down to more stable forms such as Oxygen (O₂) easily. The wastes are shredded and exposed to the agent.

Promession: Promession combines a mechanical process with the removal of heat to destroy pathological waste. It uses liquid nitrogen and mechanical vibration to disintegrate the pathological waste into a powder before burial.

2.1.8. Steps for implementation of Health Care Waste Management System in HCF

For implementation of HCWM system at HCF more efficiently with safe and sustainable approach following steps need to be followed:

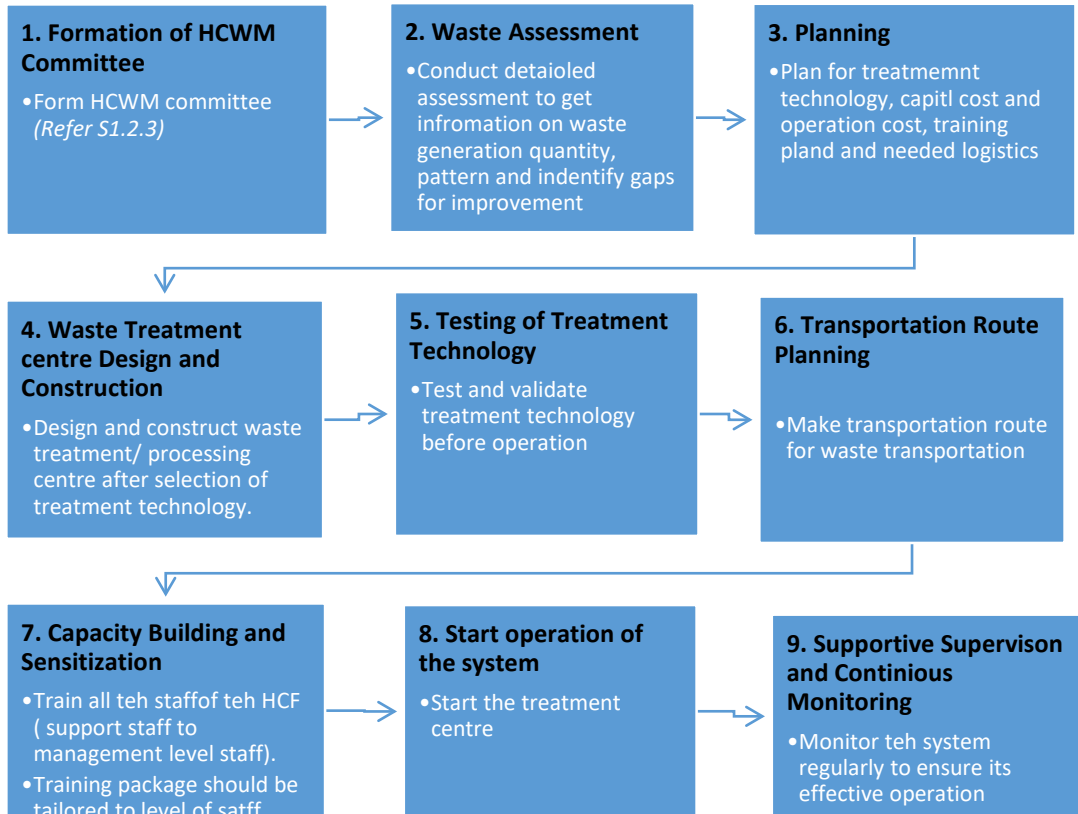


Figure 3: Implementation of HCWM system at HCF

SESSION 3: WASH IN HEALTH CARE FACILITIES

Objective: In this session the participants will get an insight on national standards for WASH in HCFs and also learn about WASH FIT	TRAINING TOOLS <ul style="list-style-type: none"> • Interactive presentation • Group Discussion • Q &A 	Time 30 Mins
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Overview: By the End of the session Participants will be able to

- Know about National Standard for WASH in HCFS
- Get insight on Water and Sanitation for Health Facility Improvement Tool(WASH-FIT)

3.1 National Standard for WASH in HCFs

National standards for Water Sanitation and Hygiene (WASH) in Health Care Facilities (HCFs) – 2078 have following objectives:

- Support HCFs to identify the need of WASH and address the identified incomplete necessities and weaknesses
- Help to reduce infection during providing health services and improve occupational safety through quality WASH services in HCFs
- Encourage health workers, patient, their relatives and visitors to take health services, learn and adopt WASH related behaviors
- Encourage to adopt WASH related good behavior at community level

It includes following:

3.1.1 Measures to stop risk of disease at HCFs

Health-care facilities are settings with a high prevalence of infectious disease agents. Not only the patients, health-workers, carers but also general public who live near the facilities on the routes of the health care wastes face unacceptable risks of infection if environmental health is inadequate. The health-care setting might even become the origin of diseases such as typhus, diarrhoea etc.

Table 8: Preventive measure for Disease Risks at HCF

Disease risk	Prevention measures
Airborne infections (e.g. <i>Legionella</i> , avian influenza, SARS, tuberculosis)	<ul style="list-style-type: none"> • Ventilation • Space available per patient • Spacing of beds • Use of separate rooms for highly vulnerable or infectious patients • Use of masks and correct incineration of wastes
Water-, food- or hand borne infections (e.g. HEV, diarrhea)	<ul style="list-style-type: none"> • Water supply (quality and access) • Excreta disposal • Hygiene facilities • Food hygiene • Hand hygiene

Infection of wounds/surgical incisions from contaminated water, medical devices and dressings (e.g. sepsis)	<ul style="list-style-type: none"> • Use of single-use medical devices and dressings • Pre-disinfection • Cleaning and sterilization of instruments and dressings • Good-quality water • Asepsis in surgical or dressings procedures
Blood borne infections due to contaminated needles and syringes, unsafe blood transfusion (e.g. HBV, HCV, HIV)	<ul style="list-style-type: none"> • HCWM and use of single-use needles and syringes • Safe blood transfusion
Heat- and cold-related stress and discomfort (e.g. high fever)	<ul style="list-style-type: none"> • Heating, ventilation, air-conditioning (HVAC) and insulation
Vector-borne disease transmission (e.g. malaria, dengue, leishmaniasis)	<ul style="list-style-type: none"> • Control of disease vectors in and around buildings • Protection of patients • Protection of infrastructure

HBV: hepatitis B virus; HCV, hepatitis C virus; HEV, hepatitis E virus; HIV, human immunodeficiency virus; SARS, severe acute respiratory syndrome. (Source: *Essential Environmental Health Standards in Health Care, 2008*)⁷

3.1.2 WASH standards for HCFs

Table 9: WASH standards for different level of Healthcare facilities.

HCF category	Water	Hygiene	Sanitation	HCWM
Primary level HCFs	Standard (II)	Standard (II)	Standard (II)	Standard (As per HCWM guideline 2069)
Secondary Level HCFs	Standard (II)	Standard (I)	Standard (II)	Standard (As per HCWM guideline 2069)
Tertiary level HCFs	Standard (I)	Basic	Standard (I)	Standard (As per HCWM guideline 2069)
Outreach services	Basic	Basic	Basic	Basic
Mobile camps	Basic	Basic	Basic	

Source: *National Standard for WASH in HCF (2078)*⁸

3.1.3 Categorization of HCFs based on WASH Standards

Table 10: HCF Categorization based on WASH Standards

Category of healthcare facility	Services provided by healthcare facility
Primary level HCFs	General Hospitals (100-300 beds), Specialist Hospitals, Specialized Hospitals, Teaching Hospitals and other Teaching Hospitals under the Institute of Health Sciences, Children's Hospitals, Specialist Ayurveda Hospitals, Dialysis Centers
Secondary Level HCFs	General Hospital 25-50 Beds, Ayurveda Health Center - General Ayurveda Hospital 25-50 Beds, Homeopathy Hospital, Laboratory, Specialist Clinic, Polyclinic, Geriatric Care Center, Eye Treatment Center, Physiotherapy Center,

⁷ Chartier Y. Essential environmental health standards in health care. Geneva, WHO2008

⁸ Ministry of Health and Population (2078) National Standard for WASH in HCF

	Rehabilitation Center (Psychosocial, Physical) , Radio Imaging Center, Hospice Center, Test Tube Baby (IVF)Center
Tertiary level HCFs	Basic Health Care Center, Basic Ayurveda Service Center, Ayurveda Health Center, Health Clinic, Dental Clinic, Geriatric Counseling Center, Ayurveda Clinic, Naturopathy Center, Acupuncture, Acupressure Center, Sowa Rigpa (Amchi) Clinic, Traditional Service Clinic, Homeopathy Clinic Treatment Center, Yoga Meditation and Physical Exercise Center, Circulatory Center
Outreach services	Outreach service sites
Mobile camps	Temporary/mobile camps-

Source: National Standard for WASH in HCF (2078)⁹

3.1.4 Roles and Responsibilities of Federal, Provincial and local bodies

The three levels presented in the table are intended as a general illustration of how related activities are required at different levels in context of Nepal. There are essential steps at federal, provincial, and local level as presented in Table below.

Table 11: Provision of the implementation of the standards at Federal, Province and Local levels

S. No	Federal	Provincial	Local
1	<ul style="list-style-type: none"> Review existing national policies and ensure that there is a national policy framework that supports improved conditions in HCSs. 	<ul style="list-style-type: none"> Raise awareness on environmental health in HCFs among key stakeholders at district level. 	<ul style="list-style-type: none"> Mobilize support from health workers, local communities and other local stakeholders to achieve and sustain a healthy health-care environment. Promote a working climate that encourages patient and staff safety.
2	<ul style="list-style-type: none"> Ensure that national bodies exist for setting and monitoring standards 	<ul style="list-style-type: none"> Ensure that an appropriate body or service exists at district level for overseeing compliance with national standards. 	<ul style="list-style-type: none"> Create and assign responsibility to a local body to oversee the implementation of national standards at HCS level. Promote a working climate that encourages patient and staff safety.
3	<ul style="list-style-type: none"> Provide national expertise and knowledge through information dissemination mechanisms 	<ul style="list-style-type: none"> Provide expertise and resources for assessment and planning at local level. 	<ul style="list-style-type: none"> Assess existing conditions, consult local stakeholders (including staff and local community) and plan improvements and new developments.
4	<ul style="list-style-type: none"> Review national standards and add to them if needed. Ensure that there is an effective regulatory 	<ul style="list-style-type: none"> Ensure that the national regulatory framework is reflected in guidance and support for compliance at district level. 	<ul style="list-style-type: none"> Define a set of targets, policies and procedures for implementing national standards and/or guidelines in a way that reflects local conditions.

⁹ Ministry of Health and Population (2078) National Standard for WASH in HCF

	framework that encourages and supports compliance.	<ul style="list-style-type: none"> Develop and use guidelines where national standards do not exist. 	<ul style="list-style-type: none"> Define how targets, policies and procedures will be applied.
5	<ul style="list-style-type: none"> Provide and/or facilitate funding for national programmes 	<ul style="list-style-type: none"> Allocate funding for planned improvements and new developments. 	<ul style="list-style-type: none"> Seek funding for planned improvements and new developments.
6	<ul style="list-style-type: none"> Monitor progress at national level and promote consistent application of standards in all regions and at all levels. 	<ul style="list-style-type: none"> Ensure oversight of improvements and new developments to ensure the consistent application of national standards in all HCFs 	<ul style="list-style-type: none"> Oversee implementation of planned improvements and new developments
7	<ul style="list-style-type: none"> Produce training and information materials appropriate to a range of health-care settings. Ensure appropriate curriculum for health-care worker training. 	<ul style="list-style-type: none"> Provide appropriate training and information to health-care workers. 	<ul style="list-style-type: none"> Provide advice and training to health-care workers and patients.
8	<ul style="list-style-type: none"> Periodic review and update of policies, standards, training contents, evaluation and monitoring tools. 	<ul style="list-style-type: none"> Inform key stakeholders at district level on updated environmental health components in HCFs 	<ul style="list-style-type: none"> Mobilize support from health workers, local communities and other local stakeholders to improve, achieve and sustain a healthy health-care environment. Promote a working climate that encourages patient and staff safety.
9	<ul style="list-style-type: none"> To coordinate effectively with the concerned Ministries (Ministry of Drinking Water and Sanitation, Ministry of Forest and Environment, Ministry of Health and Population, etc.) for housing standards. 	<ul style="list-style-type: none"> To establish effective coordination between the responsible Ministries (Social Development, Physical Infrastructure Development). 	<ul style="list-style-type: none"> Effective coordination with service providers and management committees and enforcement of standards.

Source : Essential Environmental Health Standards in Health Care, 2008; National Standards of WASH in HCF, 2020)¹⁰¹¹

¹⁰ Chartier Y. Essential environmental health standards in health care. Geneva, WHO2008

3.1.5 Roles and Responsibilities of stakeholders

Table 12 :Roles and Responsibilities of Different Stakeholders

Stakeholder group	Roles and Responsibilities
Patients	<ul style="list-style-type: none"> Comply with the standards and guidelines for use and care of WASH facilities and observe hygiene practice by staff of HCF
Patient's families and carers	<ul style="list-style-type: none"> Comply with the standards for use and care of WASH facilities and observe hygiene practice by staff of HCF
Health Facility operation and Maintenance (HFOMC)	<ul style="list-style-type: none"> Plan and implement WASH activities for achieving and maintaining the WASH targets Active and regularly go through the plans and its achievement and continuous follow up for achieving the WASH targets To plan separate budget for WASH activities. Separate staff will be deployed for health care waste management. To ensure efficient manpower in health institutions for necessary plumbing services. To coordinate with the local stakeholders. Improvement method of risk based drinking water and sanitation facilities.
Health care workers	<ul style="list-style-type: none"> Comply the guidelines/standards should be included Carry out disease prevention work such and Hand hygiene, HCWM, consistently and well Care for and maintain WASH facilities Encourage patients and care taker to adopt appropriate hygiene behaviors. Actively participate in achieving and maintaining targets/ goals set on WASH promotion plan
HF In-charge	<ul style="list-style-type: none"> Comply the standard/guidelines and monitoring/assurance of compliance of standard/guidelines Plan and implement WASH activities for achieving and maintaining the WASH targets
Support staff	<ul style="list-style-type: none"> Carry out disease prevention work such and cleanliness of HCF, HCWM, consistently Actively work in achieving and maintaining targets/ goals set on WASH promotion plan
National and international funding Bodies	<ul style="list-style-type: none"> Provide funding for new HCFs, upgrading or renovation of existing ones and ongoing maintenance of targets.
Other Communities	<ul style="list-style-type: none"> Participate in disease control sessions through community health Inform the concerned bodies about the health institution related wastes and inadequate management practices found around the health institution.

3.1.6 Level of WASH services available at HCFs

National standards on Water, Sanitation and Hygiene in Health Care Facilities have tried to include the basic and advance service level of water, sanitation and hygiene according to the SDG as in the table below:

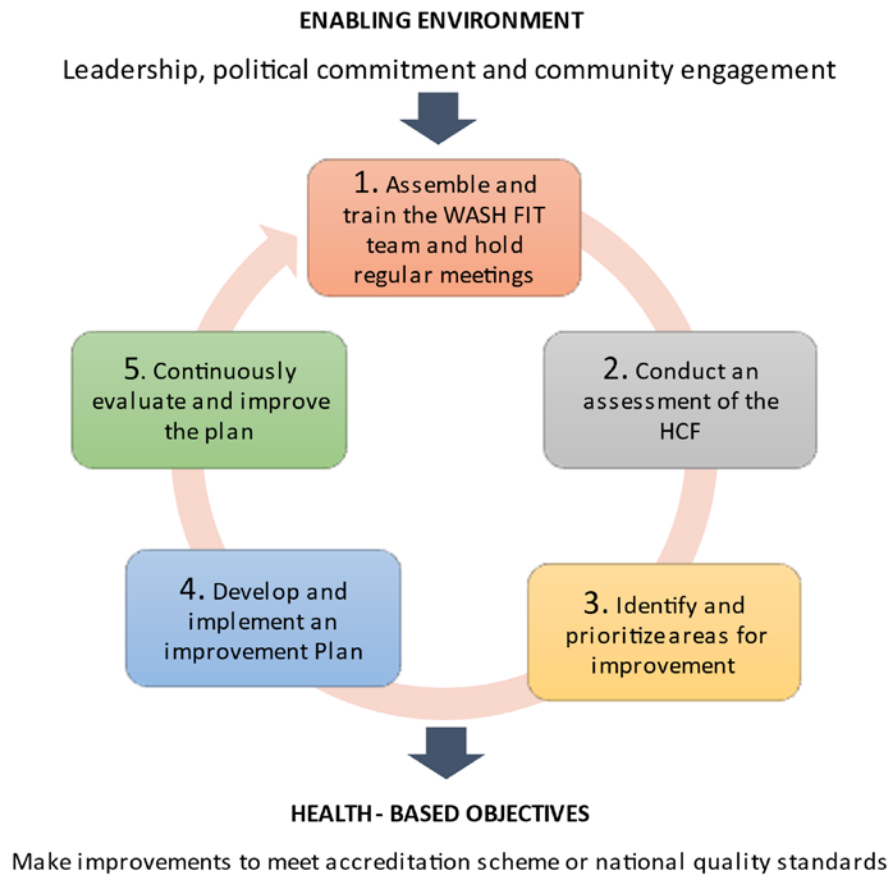
Service level	Water in Health Facilities	Sanitation in Health Facilities	Hand Hygiene in Health Facilities	Waste Disposal in Health Facilities	Environmental sanitation
Advanced	To meet all the requirement as defined at WASH guideline for advanced level				
Basic	Water from an <i>improved</i> source is <i>available on premises</i>	Improved toilets are usable, separated for patients and staff, separated for women and allowing menstrual hygiene management, and meet the needs of people with limited mobility	Hand hygiene materials, either a basin with water and soap or alcohol hand rub(Sanitizer), are available at points of care and toilets	Waste is safely segregated into at least three bins in the consultation area and sharps and infectious wastes are treated and disposed of safely	The cleaners will be trained according to the basic protocols available.

3.2 Water and Sanitation for Health Facility Improvement Tool (WASH FIT)

WASH FIT is a risk-based management tool for healthcare facilities that enables them to develop, monitor and implement an improvement plan to prioritize tangible and achievable WASH improvements. It was developed in 2015 and but was implemented from March 2017. The tool covers key aspects of water, sanitation, hand hygiene, environmental cleaning and healthcare waste management, as well as energy, building and facility management. It has a particular focus on building, upgrading and sustaining WASH and energy services that are climate resilient, equitable and inclusive. It facilitates multi-sectoral solutions by bringing together all those who share responsibility for providing WASH and waste services, including legislators and policy-makers, district health officers, hospital administrators, water engineers, waste technicians and users

The specific purposes of using WASH FIT are:

- To provide a framework to develop, monitor and continuously implement an improvement plan and prioritize specific actions when resources are limited.
- To identify areas for quality improvement in facilities, including strengthening WASH and IPC policies and standards that will lead to lower infection rates, better health outcomes for patients and improved staff safety and morale.
- To facilitate the development of an enabling environment by bringing together all those who share responsibility for providing services, including legislators/policymakers, district health officers, hospital administrators, water engineers and community WASH and health groups.
- To improve the day-to-day management and operation of facilities, by systemizing the process of managing WASH services.
- To engage community members in advocating for and demanding better WASH services and in triggering positive changes in hygiene practices in households.



Source: WHO,2019¹²

Figure 4 : WASH FIT Process

Some of the videos links that can be used as a resource material during this session:

Water, Sanitation and hygiene (WASH) in Healthcare Facilities (by WaterAid Nepal):
<https://www.youtube.com/watch?v=h8bJ18Aawcl>

¹² Water, sanitation and hygiene in health care facilities: practical steps to achieve universal access. Geneva: World Health Organization; 2019.

SESSION 4: HEALTH CARE WASTE MANAGEMENT DURING AN EMERGENCY (COVID-19)

As per the MoHP Interim Guidance-2020¹³ for HCWM during Emergency, the steps for HCWM as are :

Minimization:	Reduction of wastes at source should be applied to the extent possible. It includes rational and risk-based use of PPEs, selection of materials with minimal packaging or unpackaging at green area (low risk of contamination with infectious agents) and use of materials that can be appropriately cleaned or disinfected etc.
Segregation:	The types of hazardous waste in a facility vary according to the size of the facility and the services offered. Only the waste generated in administrative/waiting areas of health-care facilities can be considered as non-hazardous waste, otherwise all waste produced during COVID-19 patient care, is considered to be infectious and need to be segregated accordingly. Normally, in a small health care facility where only limited health services are offered, it is recommended that the infectious waste must be segregated at least in three different bins - bio-degradable, non-bio-degradable and sharp wastes.
Collection, transportation and storage:	<p>All infectious wastes should be collected safely in clearly leveled lined containers and sharp waste in sharp-safe boxes. Even the waste segregated as non-hazardous from a health care setting should be collected and disposed in strong bags (preferably red colored bio-hazard bags) and closed completely before collection and disposal by municipal waste.</p> <p>Storage place for highly Infectious waste must be selected sealed and need to be identified as an infectious waste area by using the biohazard sign. Storage times for such infectious waste should not exceed 24 hours.</p> <p>Gloves, masks and other waste generated during at-home patient care should be placed into a waste bin with a lid in the patient’s room before being disposed of as infectious waste.</p>
Treatment:	<p>The waste should be treated with use of non-combustion or steam-based treatment technologies such as autoclaves, microwaves to the extent possible prior to final disposal</p> <p>Chemical disinfection could be another option depending upon the local context and resources available.</p> <p>The option of burning of wastes is discouraged</p>
Onsite burial in pits:	The HCF with limited resources may consider small burial sites/pits for different types of hazardous waste. It is practical for only limited periods of time (1–2 years) and for relatively small quantities of waste.

¹³ Ministry of Health and Population (2020), Health Care Waste Management in the context of COVID-19 Emergency (Interim Guidance)

Leave for natural disposal:	some general waste like items such as water bottle, paper, card board, packing materials can be left for at least 7 days in a secured storage area, before sending for disposal as usual municipal waste.
Disposal:	<p>If there is a possibility that masks, or PPE are being targeted for illegal reuse, they can be cut or damaged before disposal.</p> <p>Sharp wastes should be decontaminated and then disposed of in concrete-lined sharps pits on facility premises or encapsulated by mixing waste with immobilizing material, such as cement, before disposal.</p> <p>Recycling activities should be avoided to prevent human contact with any potentially infectious domestic and medical waste. All non-biodegradable household waste should be treated as non-recyclable and disposed of through sanitary landfill as usual business. Landfill sites with informal waste picking will need increased restriction and high security.</p>
Safety and Health:	It is strongly recommended that healthcare facilities ensure that their employees and those of their sub-contractors are adequately trained, protected with PPE and provided with vaccination against tetanus, hepatitis and can access to 24 hours post exposure prophylaxis. All those who handle HCW should wear appropriate PPE and perform proper hand hygiene after removing it. For hand-hygiene, if alcohol-based hand rubs or soap and water are not available or feasible, then using chlorinated water (0.05%) for handwashing is an option as a short-term measure.

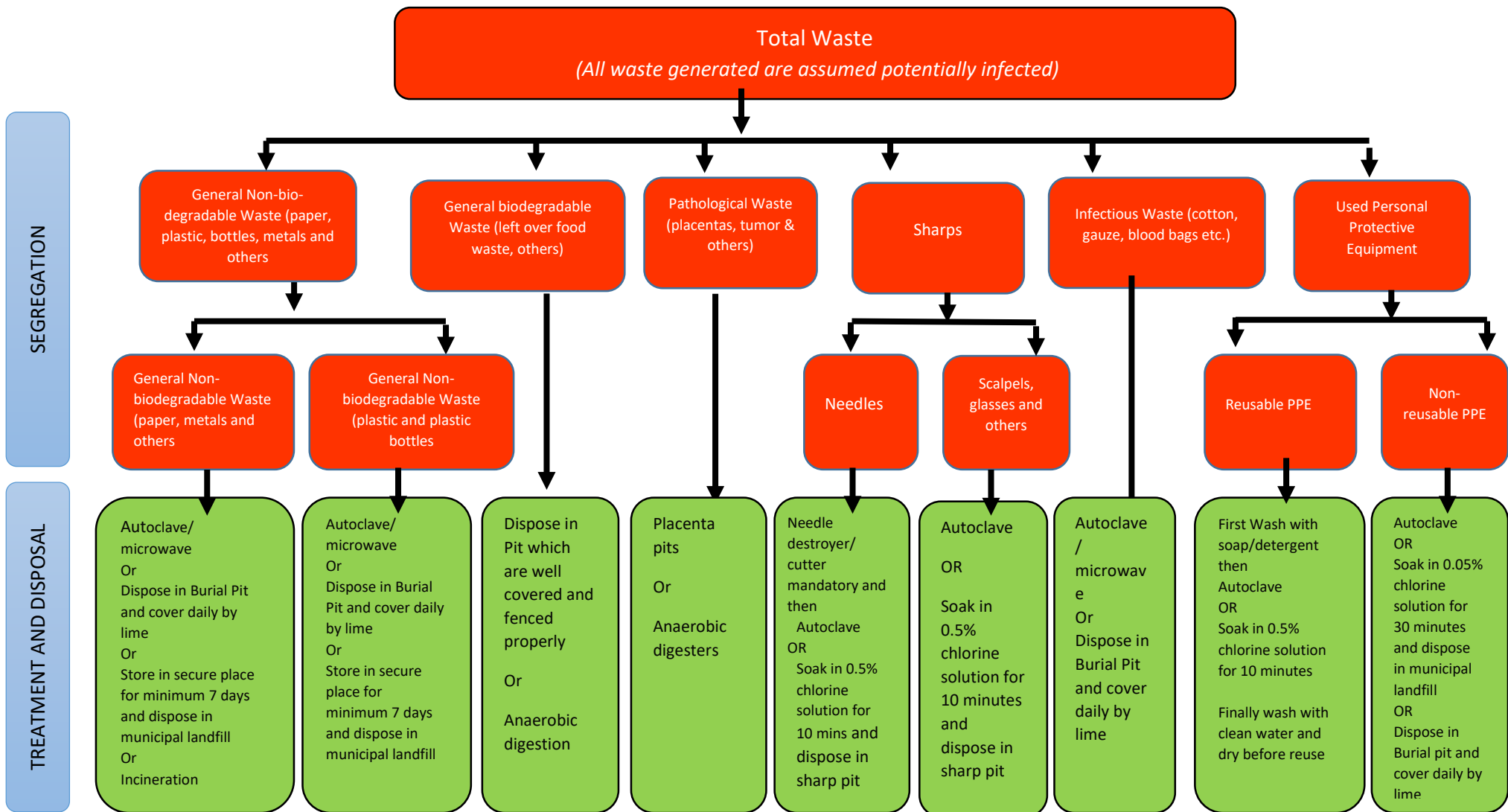


Figure 5 : Flow chart for treatment of HCW during Covid-19 (source: MoHP (2020))¹⁴

¹⁴ Ministry of Health and Population (2020), Health Care Waste Management in the context of COVID-19 Emergency (Interim Guidance)
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Some of the videos links that can be used as a resource material during session:

Waste during coronavirus (COVID-19) : (GIZ Nepal)

<https://www.youtube.com/watch?v=leYzlh-dZgk>