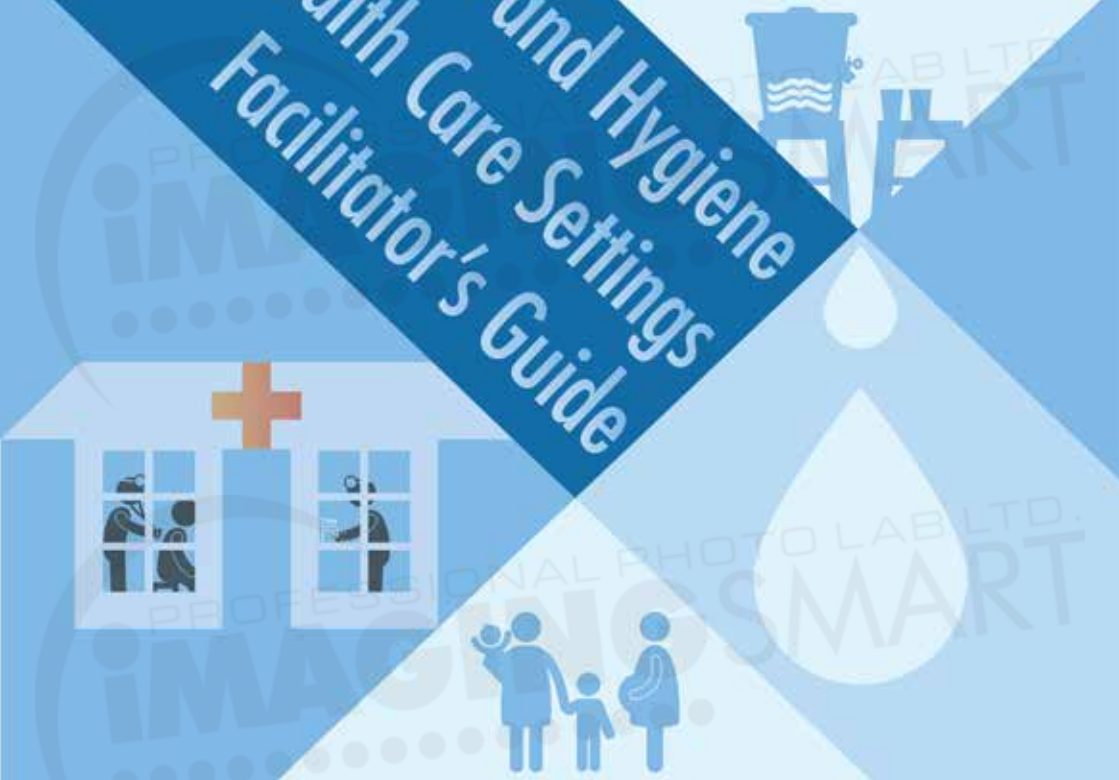
# Water Sanitation and Hygiene in Health Care Settings Facilitator's Guide


**REVOLUTIONARY GOVERNMENT OF ZANZIBAR**

*Ministry of Health Zanzibar*


**Ministry of Health**
P.o. Box 236
Zanzibar

February 2016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### MINISTRY OF HEALTH ZANZIBAR

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# FOREWORD

An understanding of the relationship between WASH (Water Sanitation and Hygiene) practices in healthcare setting is paramount in prevention, control and management of infections related sepsis for neonates and post-delivery mothers as well as other blood-borne pathogens such as HIV, Hepatitis B and Hepatitis C.

The studies revealed that health care associated infections affect hundreds of millions of patients every year with 15% of patients estimated to develop one or more infection during the hospital stay (Allegranzi et al, 2011). Similarly the risk associated with sepsis is 34 times greater in low resources setting countries (Oza et al, 2015). Valleman et al (2014), argued that lack of access to water and sanitation in health care facilities may discourage women from giving birth in these facilities or cause delays in care seeking. Furthermore, a recent publication on the water and sanitation standards within the facilities (which focused particularly on the maternity and labor wards) suggests that basic requirements for infection prevention for assisting deliveries may not be met. According to Benova et al (2014), only 24% of delivery rooms across Tanzania were found to have an improved water source at the facility, running water within the delivery room, soap for hand washing and a functional latrine for clients.

Conversely, improving WASH conditions can help establish trust in health services and encourage mothers to seek prenatal care and deliver in facilities rather than at home - an important element to reduce maternal mortality (Russo et al, 2012)

*Training on Water Sanitation and Hygiene (WASH) in healthcare setting* will form the basis of the training on WASH practices in healthcare facilities across the United Republic of Tanzania.

The main focus of the training is to empower front-liners healthcare workers to sharpen their skills, knowledge, and attitude towards WASH. It is expected that users of the guide will be able to utilize methodology appropriately when presenting the training sessions.

These improved practices in healthcare setting will result in significantly reduced maternal and newborn infections and provide better environment for expecting mothers

# ACKNOWLEDGEMENT

Training on Water Sanitation and Hygiene (WASH) in Health Care Settings (HCS) Facilitator's Guide was developed by a team of national experts. Their experience in implementing different programs concerning Water Sanitation and Hygiene, Infection prevention and Control (IPC), Quality improvement, Training institution, human resource and other expertise were utilized in preparing this guide. The work of developing this facilitator guide has been very much consultative and joint efforts of different people and organizations.

Special thanks should be directed to WaterAid Tanzania for financial and technical support, team of expert from both Water Aid Tanzania and MOH Zanzibar who dedicate their time to work toward the development of this guide from the initial stages of identification of the gaps. This team includes Denis Mazali, Rahma Awadh Salmin, James Mwombeki, Dr. Philemon Kalugira, Mosi Othman, Mohamed Ali, Sharifa Salum, Dr. Fadhil M. Abdallah, Zuhura M. Nassor , Sharifa Awadh Salmin, Salum Ali Abdalla, Issa Abeid Mussa, Said Mohammed Ali, Dr Mkasha Hijja Mkasha Dr Fatma Ghazzal, Aziza Abdulkadir Siba and Elisekile Mbwile for their technical inputs and advice into the process of developing the document which really target the frontline workers.

The Ministry is particularly grateful to the Development Partner Group [DPG] for their valuable time spent for giving technical support from the beginning of the study to the development of this guide. Our gratitude is extended to Phl-IdC, Soapbox/LSHTM-Share Project, UNICEf, WHO, UNFPA, Jhpiego and Agha Khan Foundation, SUZA for supporting the process, encouraging us and technical support which contribute a lot in finalizing the document

In a very special way we also take this opportunity to extend our appreciation to our counterpart, Mkuranga District council and Iramba District council particularly Health department for giving us opportunity to use their Health facilities for conducting pre-test of the document. These pre-test gave us very useful inputs for the document to be in this quality.

I would like to extend our deepest gratitude and appreciation to the technical consultant Dr. Amos Odea Mwakilasa who tirelessly worked and guided the secretariat comprising of Mr. Twaha Mubarak, Ramadhan Hamza Chande, Ahmed Suleiman Said and Rukaiya Mohamed Said in giving further inputs into the document and shaping it into its final format. Their contribution is highly appreciated.

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# ABBREVIATIONS

| | |
|---|---|
| AIDS | Acquired Immune- Deficiency Syndrome |
| EIA | Environmental Impact Assessment |
| FIFO | First In First Out |
| HBV | Hepatitis B Virus |
| HCSs | Healthcare Setting |
| HCV | Hepatitis C Virus |
| HCW | Healthcare waste |
| HCF | Health Care Facility |
| HIV | Human deficiency Syndrome |
| HLD | High Level Disinfectants |
| IPD | In-Patient Department |
| LIFO | Last In First Out |
| OPD | Out-Patient Department |
| PPE | Personal Protective Equipment |
| PHL-IdC | Public Health Laboratory Ivo de Carneri |
| PVC | Polyvinyl chloride |
| RCH | Reproductive Child and Health |
| WASH | Water Sanitation and Hygiene |
| WHO | World Health Organization |

# ABOUT THE FACILITATOR GUIDE

## 1.0 Introduction

The Ministry of Health, community development, gender, elders and children in collaboration with Ministry of health Zanzibar have jointly launched a training initiative on Water Sanitation and Hygiene (WASH) in health care settings. The main purpose of the training is to build sufficient capacity for front-liners health care workers for their effective service delivery for the purpose of contributing in the efforts of reducing maternal, newborn and child mortality. In addition this training will aim at protecting and safeguarding health care providers, patient and relatives from nosocomial infections.

The facilitator's guide therefore is intended to empower potential expert trainers with pre- requisite facilitation knowledge, attitudes and skills including necessary conditions for planning, conducting and managing the training in order to ensure consistence and for an improved teaching learning interaction and outcome.

To achieve this, the guide outlines minimum facilitation standards, methods and approaches, teaching resources, feedback and evaluation of session's quality of the teaching process and the expected outcomes. It is therefore, anticipated that this guide will act as a tool for planning, facilitation, harmonization of the teaching-learning process country wide.

## 2.0 Objectives of the Guide

The specific objectives of this guide are to:

a) Empower the facilitator with appropriate teaching learning, management and evaluation skills
b) Organize the content into sizeable chunks for easy assimilation by trainees
c) Make teaching learning interactive process effective, easy and understandable.
d) Support learner integration of theoretical concepts and practical skills.
e) Promote consistence in delivery of standardized and quality training undertaking in different geographical areas in the country.

## 3.0 Course Organization and Management

This training package is designed so as to integrate the learning process in a meaningful and logical manner. The content is organized based on main subject topics and delivered on session by session basis. At the beginning of every session there will be a session overview which outlines the minimum time and activity/ methods for delivery of the relevant content.

### 3.1 Course target

This Guide is intended for potential expert trainers especially Health Officers, Nurses, Clinicians and qualified laboratory staff. However, those professionals with Sanitation and Hygiene, Infection Prevention and Control (IPC) background would have an added advantage for selection to undertake the training

### 3.2 Objectives of the course

The objectives of the course are to:

a) Create awareness and disseminate relevant WASH information to health care workers
b) Bridge the existing gap of knowledge and skills of front-liners health care workers
c) Contribute towards the effort of reducing maternal, newborn and child heath
d) Protect and safeguard health care providers

### 3.3 Course Structure and Duration

The training will deploy approximately twenty five (25) to thirty (30) participants who are front-line health workers (responsible for sanitation activities at the facility) including medical attendants, health orderlies, cleaners, laundry personnel, mortuary attendants, ambulance drivers and other staff involved in cleaning and sanitation activities within health care settings.

The course is expected to cover eight (8) hours in a day for five days in a week which makes a total of forty (40) hours. A total of 16 hours is allocated to theoretical teaching versus 24 hours assigned for practical related learning out of 40 hours in a week. The course is designed in such a way that it will be hands-on-practical undertaking with the emphasis mainly being on-the-job learning, coaching and mentoring. It will be most preferred that the course is undertaken within health care setting for relevance and application of learned skills in the context by trainees.

### 3.4 Course teaching approach and methodology

Since the course is targeting adult learners, it would be important that the teaching approach and methods be participatory in nature. This will allow active participation of trainees on their own learning with maximum provision for facilitator – trainee interaction, critique and feedback. Various teaching methods will be applied particularly those that impact maximum skills attainment. A few of those adult learning approaches and methods are highlighted here as examples:

#### *3.4.1 Session Plan and Organization*

a) Set Ground Rules/Norms
b) Solicit participants' expectations
c) Explain Logistics issues
d) Highlight session objectives
e) Assessment methods

#### 3.4.2 Principles of Adult learning

***Principle No1***

i. Adults will only learn when they want to.
ii. No adult will learn under pressure.
iii. They must be motivated to acquire new knowledge or skills that will help them in their work or day-to-day life.
iv. Their desire to learn can decrease or increase depending on the approach and methodology that is being used.

***Principle No 2***

i. Adults will only learn when they feel they need to.
ii. Basically, any attained knowledge will only "make sense" if the adult can see the applicability of what is being learned, and this will usually have to happen at a very early stage in the learning process in order to keep interest alive. Adults only really want to learn that which will help them in the short term.

***Principle No 3***

i. Adults learn by doing. No adult enjoys being fed vast amounts of theory with little or no practice.
ii. As we grow older, we much prefer a "hands-on" approach to things.

iii. The learning will be much more effective if we can take an active role in the learning process.

iv. Thus it's important to encourage objective discussion both in analyzing the problem and coming up with a solution.

***Principle No 4***

i. Adults need feedback.

ii. If one thing is preserved from their childhood days, it's the constant need to know how well they are doing.

iii. So, it's important that learning process provide adults with constructive feedback, through the use of artifices such as self-evaluation questionnaires and activities.

***Principle No 5***

i. Experience will interfere in adult education. No person likes to be told that their "tried and tested" way of doing things is "wrong".

ii. Any new information being presented must be integrated with their own experience in such a way as to complement or even supplement what they already know.

iii. Categorically labeling something as the "right" or "best" way is a pitfall that should be avoided.

***Principle No 6***

i. Adults learn better in an informal environment.

ii. At this point in their lives, adults won't put up with a "schoolhouse lecturer" who demands that they sit up straight in their desks.

iii. They require a more relaxed atmosphere; one that will stimulate them to participate, thus allowing them to accept every ounce of new knowledge as a product that will solve an issue they are dealing with.

***Principle No 7***

i. Adults need feedback.

ii. If one thing is preserved from their childhood days, it's the constant need to know how well they are doing.

iii. So, it's important that learning process provide adults with constructive feedback, through the use of artifices such as self-evaluation questionnaires and activities

***Principle No 8***

i. Adults require a variety of teaching methods.

ii. It's important that different approaches be used when trying to pass on knowledge to adults. The use of audiovisual materials is highly recommended; as is the use of interactive activities such as role-playing drawings, simulation.

Thus, clear understanding of the above mentioned principles of adult learning, makes the facilitator to use appropriate adult learning methods and approaches to maximize adult learning

### 3.4.3 Teaching Methods: Use of groups in teaching and learning

One of the commonest used adult learning methods is small and or large group. It is expected that learning can be more interactive and effective when group members share their learning in a small or relatively large group depending on the situation. This provides an opportunity to every member of the group to actively participate and contribute his or her opinion towards the group assignments. However, much as a small or large group can be effective in learning situations, a facilitator is being cautioned that if these groups are not well organized, structured and managed they can result into destruction of learning.

Therefore, understanding the concept of group formation, group characteristics and group dynamics is absolutely imperative for facilitators to uphold so that monitoring and evaluation of effective group learning can be done to result into expected learning output/ outcome. We present down below the highlights of group concepts to empower the facilitator with adequate skills of the use of this method in teaching and learning.

***What is A Group?***

A group refers to two or more people who share a common meaning and evaluation of themselves and come together to achieve common goals. In other words, a group is a collection of people who interact with one another; accept rights and obligations as members and who share a common identity.

***What is a small group?***

There is no one right size for a group. A facilitator might not have much control over the class size either. Some insist that the magic number is six, others that it is between 5 to 8. We do not think the precise size matters. A small group could be as small as one. But we use small group techniques as a way of dividing up larger classes, involving students in smaller groups working together. However, for the purpose of this WASH training we recommend that the most desirable number of small group should be formed with 2 to 6 members.

***What is large group***

As explained above it is very difficult to define what large group is. This is because the size of your class is the determinant as to how many group members one might have in a group. However, for the purpose of this training a proposed size of the class is between 25 to 30 members, it is being recommended that the minimum members in a group be composed of seven and above.

***Group Formation***

Group formation involves different stages. Understanding what takes place in every stage of group formation for the facilitator is extremely important. This is because knowing of what happens at each stage of a group formation equips the facilitator with knowledge and skills in knowing and making timely intervention where and when effective learning is threatened. We therefore present the highlights of what transpires at each of the group formation stages, thus;

***a) Forming:***

The first stage in the life of a group is concerned with forming a group. This stage is characterized by members seeking either a work assignment (in a formal group) or other benefit, like status, affiliation, power, etc. Members at this stage are studying one another as a way of group member familiarization. However, they are not very open and their interaction is a bit reserved as they curiously struggle to understand the behavior to each other.

***b) Storming:***

The next stage in this group is marked by the formation of two or three individuals within the same group. Members seek out familiar or similar individuals and begin a deeper sharing of self. Continued attention to the subgroup creates a differentiation in the group and tensions across the two or three individuals may

appear. Pairing is a common phenomenon. There will be power struggle about roles and controlling the group.

***c) Norming:***

The third stage of group development is marked by a more serious concern about task performance. The members begin to open up to one another and build relationship with other members in the group. Efforts are made to establish various norms for task performance.

Members begin to take greater responsibility for their own group and relationship while the authority figure becomes relaxed. Once this stage is complete, a clear picture will emerge about hierarchy of leadership. The norming stage is over with the solidification of the group structure and a sense of group identity.

***d) Performing:***

This is a stage of a fully functional group where members see themselves as a group and get involved in the task. Each person makes a contribution and the authority figure is also seen as a part of the group. Group norms are followed and collective pressure is exerted to ensure the process of group effectiveness. Each member roles are clearly defined.

***e) Adjourning/Disbanding:***

Some members may feel happy over the performance, and some may be unhappy over the stoppage of meeting with group members. Adjourning may also be referred to as mourning, i.e. mourning the adjournment of the group.

In the case of temporary groups, like project team, task force, or any other such group, which have a limited task at hand, also have a fifth stage, This is known as adjourning.

The readers must note that the four stages of group development mentioned above for permanent groups are merely suggestive. In reality, several stages may go on simultaneously.

***What is Group Dynamics?***

Group dynamics deals with the attitudes and behavioral patterns of a group. Group dynamics concern how groups are formed, what is their structure and which processes are followed in their functioning. Thus, it is concerned with the interactions and forces operating between groups.

Group dynamics is relevant to groups of all kinds – both formal and informal. In a teaching and learning environment, uses of educational groups are very common and therefore, the study of groups and group dynamics is an important area. Understanding how group is formed and group dynamics is important for the facilitator because so often theses processes may result into severe group conflict to the extent that effective learning is disrupted and affected. Knowing what transpires in the group places the facilitator in a better position for making a conflict resolution.

***Characteristics of a Group:***

The characteristics of group very much depend on the behavior of individual members in the group. Human beings differ in terms of their attitudes, attributes and personality values. The animal analogy being presented here describes and verifies what can go wrong into the educational group.

There are animals that display attributes of being an aggressor (rhino), blocker (elephant) destructor (monkey) Superior (giraffe) Foolery and joker (monkey) a fighter (lion) and so forth. Each of these attributes can positively or negatively impact on the learning processes.

***How to facilitate a group discussion***

a) Is a directed, focused conversation about a topic where a facilitator asks key questions to elicit responses from participants and where all learning takes place through interaction
   - Form of question and answering
   - Lectures often include the use of question and answering as well as small or large group discussions

b) Good way to break up lectures and keep participants interested in the content

c) Allows participants to provide information and contribute and the trainer to draw on the experience of the participants as part of the learning process

***Steps in Group discussion***

a) Begin discussion with one clearly, simply stated question
   - Ex: Why implementing WASH is important?

b) Allow time for several initial responses; write on flipchart, if desired

- Ex: Because it helps to prevent health workers patients and relatives to be prevents against nosocomial infection.

c) Ask follow-up questions to "drill down" on important points:
   - Ex: Why is Hand washing hygiene is an important part in WASH intervention?

d) Summarise key points before moving on

***Benefit of Group Discussion***

a) Helps participants learn from each other
b) Gives participants a greater sense of responsibility and control in the learning process
c) Promotes team work
d) Clarifies personal values
e) Participation is encouraged
f) Allows for reinforcement and clarification of lesson through discussion

***How to assess and evaluate learning***

The facilitator will make a deliberate effort in assessing whether learning has taken place or not. Assessment can be before during and after training. A number of assessment and evaluation methods will be deployed, for example:

***a) Pre and post test –*** is a formative assessment by using pre prepared questions to test knowledge and understanding before and after the training.

***b) Inbuilt in session –*** facilitator participant interactive questions and answers assessment

***c) Observing performance –*** using demonstration and return demonstration to test skills and attitudes both in class and field practices. Or observing and assessing performance (practical skills- how to do) and give a score using an observation checklist

**Feedback –** two way feedback where facilitator and participant will interact in giving and receiving feedback constructively.

**a) Group and individual assignments –** Give participants an exercise to work on and score a mark

**b) Written Examination –** Giving a set of questions to which participants will give responses for facilitator to mark and give a score

***Expected outcome after this WASH training***

a) Improved participants competences towards implementing WASH activities
b) Wash activities adopted and practiced in health facilities
c) Reduction of maternal, neonates and child sepsis
d) Improved hygienic status of health facilities in the country

**Block Time Allocation for Theory and Practical Sessions**

| 1st DAY | 2nd DAY | 3rd DAY | 4th DAY | 5th DAY |
|---|---|---|---|---|
| **SESSION 1** | **SESSION 3** | **SESSION 5** | **SESSION 7** | |
| Environmental Sanitation | Control of Rodents, Vermin and Pest in Health care settings | Proper Handling of soiled linen and beddings to reduce cross infection in health facilities | Accessibility of adequate water supply and its importance for prevention of infections in health care facilities | Field Practical session |
| **5hrs (3hrs theory + 2hrs practical)** | **2 hrs (2hrs theory)** | **2.30hrs (2hr theory 30min practical)** | **3hrs (2hr theory 1hr practical)** | **4hrs** |
| **SESSION 2** | **SESSION 4** | **SESSION 6** | | |
| Practicing hand hygiene in prevention and control of infections in health facilities | Application of decontamination and sterilization methods to reduce cross-infections in Health facilities | Setting and housekeeping in HCFs | Field Practical session | Field Practical session |
| **3hrs (2hrs theory 1hr practical)** | **6hrs (2hrs theory 4 hrs practical)** | **5.30hrs (3hrs theory 2.30hr practical)** | **5hrs** | **4hrs** |

Session 1

## Environmental Sanitation in Health care setting

***Total Session Time: 5hrs (3hr theory+ 2hrs practical)***

### Session learning outcomes: At the end of this session, learners will be able to

a) Define various terms related to environmental sanitation in health care settings
b) Discuss the Role and Responsibilities of various Stakeholders of health facility in Environmental Sanitation
c) Explain the effects of uncontrolled waste in health care settings
d) Demonstrate proper handling for different types of waste generated in health care setting
e) Identify mechanisms of disposing health care waste in a standard method

### *Resources Needed*

a) Flip charts, marker pens, and masking tape
b) Whiteboard markers
c) Laptop and projector
d) Video clips on health care waste management
e) Colour coded bin and PPE

### SESSION OVERVIEW

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 1 | 20 min | Presentation | Introduction, Learning outcomes |
| 2 | 30 min | Presentation, Buzzing, brainstorming | Definitions of terms related to Environmental Sanitation |
| 3 | 40 min | Presentation/Discuss brainstorming | Role and Responsibilities of Stakeholders of health facility in Environmental Sanitation |

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 4 | 60 min | Presentation/Buzzing | Explain the effects of uncontrolled waste in health care settings |
| 5 | 70 min | Presentation/exercise Buzzing | Proper handling different types of waste generated in health care setting |
| 6 | 50 min | Repeat Demonstration | Disposal of health care waste in a standard method |
| 7 | 20 min | Group Feedback | Key points |
| 8 | 10 min | Presentation | Evaluation-Question and answer session |

**Session content**

*Facilitator/ learner activities*

a) Introduce the topic and display learning outcomes
b) Ask learners to read Learning outcomes
c) Clarify displayed learning outcomes
d) Divide learners into groups to undertake the following activity on definition of term

***Definitions of term related to Environmental Sanitation***

**ACTIVITY:** Participants work in groups to share knowledge on definition of terms in environmental sanitation.

**ASK** learners to buzz in pairs on 'What is Environmental Sanitation?'

**ALLOW** few pairs to respond.

**WRITE** their responses on a flipchart/board.

**SUMMARIZE** the discussion using the information below.

***Definitions of terms***

a) Sanitation
b) Environmental Sanitation
c) Hygiene
d) Hygiene Promotion
e) Disease control
f) WASH in health care facilities

**Sanitation** means conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal and solid waste management.

It is an hygienic means of promoting health through prevention of human contact with the hazards of wastes as well as the treatment and proper disposal of waste.

Hazards can be physical, microbiological, biological or chemical agents of disease such as excreta, solid wastes, hospital waste, domestic wastewater (sewage or grey water) industrial wastes and agricultural wastes.

*In simple language sanitation" as a whole is a "big idea" which covers in many aspects:*

a) *Safe collection, storage, treatment and disposal/re-use/recycling of human excreta (faeces and urine);*
b) *Management/re-use/recycling of solid wastes (trash or rubbish);*
c) *Drainage and disposal/re-use/recycling of household wastewater (often referred to as sullage or grey water);*
d) *Drainage of storm water;*
e) *Treatment and disposal/re-use/recycling of sewage effluents*
f) *Collection and management of industrial waste products; and*
g) *Management of hazardous wastes (including hospital wastes, and chemical/ radioactive and other dangerous substances).*

**Environmental sanitation** means the art and science of applying sanitary, biological and physical scientific principles and knowledge to improve and control the environment and factors therein for the protection of the health and welfare of the public.

**Hygiene** is a set of practices performed for the preservation of health. According to the World Health Organization (WHO), "Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases.

**Hygiene Promotion** is a planned, systematic approach to enable people to take action to prevent and/or mitigate water, sanitation and hygiene-related diseases. It can also provide a practical way to facilitate community participation, accountability and monitoring in WASH programs. Hygiene promotion should aim to draw on the

affected population's knowledge, practices and resources, as well as on the current WASH evidence base to determine how public health can best be protected

**Diseases Control** is a reduction in the incidence, prevalence, morbidity or mortality of an infectious disease to a locally acceptable level; elimination as reduction to zero of the incidence of disease or infection in a defined geographical area; and eradication as permanent reduction to zero of the worldwide incidence of infection.

**WASH in health care facilities** according to WHO should include availability of on-site safe, sufficient water, adequate numbers of improved, accessible sanitation facilities for men and women, safe hygiene practices (e.g. hand washing), hygiene promotion to patients and caregivers and safe management and disposal of health care waste

***Role and Responsibilities of stakeholders of Health facility in Environmental Sanitation***

**ACTIVITY:** Facilitator guides participants by asking them to identify and name the roles and responsibilities of various stakeholders in healthcare facilities in environmental sanitation

**ASK** learners to brainstorm **(05 minutes)** on the "Role and Responsibilities of stakeholders of Health facility in Environmental Sanitation'

**ALLOW** few learners to respond

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below:

**Roles and responsibilities of different stakeholders**

The table below presents the role and responsibilities of stakeholders at district and local levels. It also outlines some of the things they can do to help achieve and maintain improved environmental health conditions in health-care settings. The list is not exhaustive and can be added to in any particular context.

***Roles and responsibilities for implementing guidelines and standards for environmental sanitation in health-care settings***

| Stakeholder group | Contribution to improved environmental health in HCSs or home care |
|---|---|
| Patients | • Comply with procedures for use and care of water and sanitation facilities, and observe appropriate hygiene measures. |
| Patients' families/ caretakers | • Comply with procedures for use and care of water and sanitation facilities, and observe hygiene measures.<br>• Encourage patients to do the same. |
| Health-care workers | • Carry out disease prevention duties (such as cleaning, health-care waste management, hand hygiene and asepsis in health care) consistently and well.<br>• Care for and maintain water and sanitation facilities.<br>• Encourage patients and careers to adopt appropriate behaviors.<br>• Participate actively in achieving and maintaining targets. |
| HCF managers/ | • Plan and implement programmes to set, achieve, monitor and maintain targets.<br>• Create conditions in which staff are motivated to meet and maintain targets. |
| Health authorities/local Government | • Provide resources and direction for setting, achieving and maintaining targets. |
| Environmental health services | • May collect and dispose of health-care waste in a centralized facility.<br>• Provide specialist advice for identifying problems and recommending solutions for water supply, sanitation and hygiene. |
| Politicians | • Provide and mobilize political and financial support for improvements. |
| Public works and/or water and sanitation sector | • Ensure correct design and construction of buildings and sanitary infrastructure and maintain services to HCSs as a priority.<br>• Provide skilled services that comply with national standards for construction, maintenance and repair of buildings and sanitary infrastructure |
| Other communities | • Participate in disease control sessions through community health organizations that might exist.<br>• Report on health-care waste found outside HCSs. |

***Health Problems associated with Poor Environmental Sanitation***

**ACTIVITY:** What are the health problems associated with poor environmental sanitation?

**Divided** into small groups of 4-5 people to respond to the question above

**ALLOW** few pairs to respond

**WRITE** their responses on a flip-chart/board

**SUMMARIZE** the discussion using the information below:

**a) Effects of uncontrolled waste in health care settings.**

Uncontrolled waste is a group of waste which is not safely disposed off, it can be either hazardous or not hazardous waste generated at health care settings.

All individuals exposed to healthcare waste are potentially at risk of being injured or infected. Such risk can be categorized as follow

### 1. Occupational and public health risks

a) During handling of wastes, the medical and ancillary staff as well as the sanitary labourers can be injured if the waste has not been packed safely.

b) In that respect, sharps are considered as one of the most dangerous category of waste. Many injuries occur because syringe needles or other sharps have not been collected in safety boxes or because these have been overfilled.

c) The general public can be infected by HCW either directly or indirectly through several routes of contamination.

d) Dumping HCW in open areas is a practice that can have major adverse effects on the population. The «recycling» practices that have been reported, particularly, the reuse of syringes is certainly the most serious problem in a number of countries.

e) The WHO estimates that over 23 million infections of hepatitis B, C and HIV occur yearly due to unsafe injection practices (reuse of syringes and needles in the absence of sterilization).

f) There is also a public health risk linked to the sale of recovered drugs in the informal sector when the elimination of expired drugs isn't properly controlled and monitored

g) The general public and more specifically the children playing with the items they can find in the waste outside the healthcare facilities when it is directly accessible to them.

### 2. Indirect risks via the environment

a) Finally, the dumping of HCW in uncontrolled areas can have a direct environmental effect by **contaminating soils and underground waters.**

b) During incineration, if no proper filtering is done, air can also be polluted causing illnesses to the nearby populations.

c) This has to be taken into consideration when choosing a treatment or a disposal method

**NB.** Waste management and treatment options should first protect the healthcare workers and the population and minimize indirect impacts from environmental exposures to HCW.

***Proper handling of different types of waste generated in health care setting***

**ACTIVITY: Participants share and exchange learning on the principles or steps of waste management**

**Discuss in a small groups on** *'Principles or steps of waste management?'*

**ALLOW** each group make a presentation in plenary

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

### Handling of Healthcare Waste

The management of waste must be consistent from the point of generation to the point of final disposal (grave). The path between these two points can be segmented schematically into eight steps as follow:

***Step 1: Waste minimization***

This first step comes prior to the production of waste and aims at reducing as much as possible the amount of Health Care Waste (HCW)

that will be produced by complying with acceptable procedures, practicing re-use, efficient purchasing policy (don't purchase what you don't need at that time) and having a good stock management, for example application of FIFO (First In First Out) or LIFO (Last In First Out) depending to the circumstances.

***Step 2: Waste generation***

The point at which waste is produced, at the Health care setting, waste is generated from various section/departments from reception, OPD, IPD, RCH, Labour, Theatre, Laboratory and at the management blocks. The level of being hazardous varies from point to point depending on the activities and procedure that are taking place for example it is expected to receive less hazardous waste from reception, management blocks and OPD than those from theatre, labor and Laboratory.

***Step 3: Segregation and containerization***

The correct segregation of waste at the point of generation relies on a clear identification of the different categories of waste and the separate disposal of the waste in accordance with the categorization chosen.

Segregation must be done at the point of generation of the waste. To encourage segregation at source, (reusable) containers or baskets with liners of the correct size and thickness are placed as close to the point of generation as possible. They should be properly color-coded (yellow or red for infectious waste) and have the international infectious waste symbol clearly marked.

When they are 3/4 full, the liners should be closed with plastic cable ties or string and placed into larger containers or liners at the intermediate storage areas. Suitable latex gloves must always be used when handling infectious waste.

For waste which is expected to be disposed in placenta pit, do not treat them with chemical disinfectants such as chlorine before disposal. These chemicals destroy the microorganisms that are important for biological decomposition

***Step 4: Intermediate storage (in the HCF)***

These are area, where the larger containers are kept before removal to the central storage area, should both be close to the wards and not accessible to unauthorized people such as patients and visitors. In order to avoid both the accumulation and decomposition of the waste, waste must be collected from these areas on a regular daily basis

***Step 5: Internal transport (in the HCF)***

Transport to the central storage area is usually performed using a wheelie bin or trolley. Wheelie bins or trolley should be easy to load and unload, have no sharp edges that could damage waste bags or containers and be easy to clean. Ideally, they should be marked with the corresponding coding color.

The transport of general waste must be carried out separately from the collection of healthcare risk waste (HCRW) to avoid potential cross contamination or mixing of these two main categories of waste. The collection should follow specific routes through the Health care facilities (HCF) to reduce the passage of loaded carts through wards and other clean areas.

***Step 6: Centralized storage (in the HCF)***

The central storage area should be sized according to the volume of waste generated as well as the frequency of collection. The storage should not be situated near to food stores or food preparation areas and its access should always be limited to authorized personnel. It should also be easy to clean, have good lighting and ventilation, and be designed to prevent rodents, insects or birds from entering. Storage time should not exceed 24-48 hours especially in the area that have a warm and humid climate.

***Step 7: External transport***

External transport should be done using dedicated vehicles. They shall be free of sharp edges, easy to load and unload by hand, easy

to clean / disinfect, and fully enclosed to prevent any spillage in the hospital premises or on the road during transportation.

***Step 8: Treatment and final disposal of healthcare waste.***

There are two methods of treatment and disposal of health care waste which are onsite and off-site.

## 8.1 Onsite disposal (Incinerator and placenta pit)

### *i. Incineration*

Incineration is a high-temperature dry oxidation process that reduces organic and combustible waste to inorganic, incombustible matter and results in a very significant reduction of waste volume and weight. This process is usually selected to treat wastes that cannot be recycled, reused, or disposed off in a landfill site. Waste which is suitable for incineration such as;

a) Content of combustible matter above 60%

b) Content of non-combustible solids below 5%

c) Content of non-combustible fines below 20%

d) Moisture content below 30%

The combustion of organic compounds produces mainly gaseous emissions, including steam, carbon dioxide, nitrogen oxides, and certain toxic substances (e.g. metals, halogenic acids), and particulate matter, plus solid residues in the form of ashes.

If the conditions of combustion are not properly controlled, toxic carbon monoxide will also be produced. The ash and wastewater produced by the process also contain toxic compounds, which have to be treated to avoid adverse effects on health and the environment. However on other hand there is also waste which are not suitable for incineration such as;

a) Pressurized gas containers
b) Large amounts of reactive chemical waste
c) Silver salts and photographic or radiographic wastes
d) Halogenated plastics such as polyvinyl chloride (PVC)
e) Waste with high mercury or cadmium content, such as broken thermometers, used batteries etc
f) Sealed ampoules or ampoules containing heavy metals

**ii.** **Placenta pit** is dug hole which is constructed to allow pathological waste to degrade naturally. Around 90% of the waste is liquid, which will soak away into the ground. The rest will degrade though a complex and variable mixture of biological and chemical processes. These are primarily anaerobic processes though some aerobic decomposition will take place in the upper layers. The waste should not be treated with chemical disinfectants like chlorine before being disposed of because these chemicals destroy the microorganisms that are important for biological decomposition.

***Usage of Placenta pit***

a) Only use the pit to dispose of pathological and biodegradable organic waste.

b) Do not use the pit for soft waste (e.g. bandages), sharps or toxic waste.

c) Do not treat the waste with chemical disinfectants such as chlorine before disposal. These chemicals destroy the microorganisms that are important for biological decomposition

d) Dispose of organics in the pit as soon as they arrive.

e) Keep the cover over the hole at all times except when putting waste into the pit.

f) Clean and disinfect the slab regularly. Non-persistent disinfectants such as hydrogen peroxide are recommended.

g) Do not add disinfectants to the pit.

h) Ash, charcoal or lime may also be added to reduce odors.

- Ash or charcoal helps reduce odors without adversely affecting decomposition.
- Lime has a high pH (about 11) so will kill a lot of pathogens, but beware that it may also kill bacteria needed for rapid and complete decomposition.

When the level of the waste reaches 50 cm from the surface, the pit should be closed down. And do the following; Mark it permanently to explain the contents and the closure date and record the location for future reference.

It should be possible to reuse the pit after enough time has elapsed whereas the rate of decomposition depends on several factors, including the microbial and chemical conditions, temperature and humidity.

If it is necessary to remove material from an old pit the following should be observed;

a) Leave at least 2 years after the closure of the pit to maximize the elimination of pathogens and their eggs or cysts.

b) If possible, test the material to be sure it is not infectious.

c) Provide workers with PPE (mask, goggles, boots, gloves, overalls).

d) Limit the use of any extracted material as a fertilizer; do not use for food growing or outside the hospital premises.

## 8.2 Off-Site disposal

Is method of disposing waste that often accepted at local landfills such as food remains, packaging, papers, broken breaks etc. These types of waste are usual less harmful to human and environment.

Therefore frontline workers they have major role to play to ensure segregation, collection and storage done appropriately before off-site method taking place.

The following are key points to note regarding to health care waste management

a) Segregation at the point of generation, is crucial so as know the appropriate treatment and disposal to each type of health care waste.

b) Storage - Segregated waste shall be stored inside the healthcare facility in an approved designed area.

c) Storage time of infectious and pathological health care waste shall not be held at the collection point for not more than 48 hrs

d) Instructions on waste segregation and identification shall be posted at each waste collection point.

***Excreta Disposal (human waste)***

Safe disposal of excreta at health facility is important so that it does not contaminate the environment, water, food as well as to prevent cross contamination to patient, staff and relatives within the health care setting. This can be accomplished in many ways, some requiring water, others requiring little or none. Regardless of method, the safe disposal of human faeces is one of the principal ways of breaking the faecal–oral disease transmission cycle. Sanitation is therefore a critical barrier to disease transmission. Here below we give a brief explanation with regards to management of human excreta at health care facility as follows.

***Latrine /Toilet hygiene***

Hospital and health centers have special requirements for sanitation as they have to deal with the patients who are infected with various diseases.

Staffs caring for these patients are exposed to the higher risk of the infection than the general public.

***Requirement for Latrine/toilet hygiene in healthcare facilities***

Toilet for infectious patients must be separated from toilets for staff and other patients

Toilet facility should be thoroughly cleaned several times during the day, should be free from flies and other disease vectors as well as protect users and environment from excreta.

It is necessary excreta and sullages from the health facility are correctly treated. It should have their own waste water treatment

Facility for washing and sterilizing bedpans hygienically should be available

Hospitals/medical centers proportionality of sanitary accommodation should be 1 toilet to 20 beds or 50 outpatients/ 1 toilet to 10 beds or 20 outpatients.

There should be separate toilets required for men and women, and separate toilets should be provided for staff and patients.

Special children's toilets should be provided where many children use the health-care facility. Children's toilets should generally be clean, light and welcoming for children with suitable support (hand rail), a smaller drop hole or pan than for adults, and space for an accompanying care.

Toilets should be designed and equipped to respond to cultural practices (e.g. anal cleansing with water or sitting instead of squatting).

Toilets are easily accessible and no more than 50m / 150ft from all users.

The health-care facility grounds and environment should be free from human faeces

Latrine pits and septic tank infiltration systems should be at least 30m / 90ft from water sources and the bottom of the pits should be at least 1.5m / 5ft above the groundwater table

Use disinfectant (0.2% chlorine) and water to disinfect the toilet whenever they are dirty. Chlorine should be spilled on all exposed surfaces and a brush to remove visible soiling.

Strong disinfectants should not be used in large quantities, as potentially dangerous, and may affect the decomposition process.

In specific contexts (e.g. isolation for cholera patients), half a cup of 2% active chlorine solution should be used to disinfect faeces or vomit.

Usually the chlorine solution is already contained in the container that will receive the faeces or vomit from the patients in bed.

***Key Points***

a) The relationship between Environmental Sanitation and Infection
b) Health problems which can be controlled through improving Environmental sanitation.
c) What are the efforts can be done in a health facility to improve sanitation.

***Evaluation***

**Use an interactive facilitator-participants question and answer response**

***Asks participants the following questions, and clarify***

a) What is the importance of improving Environmental sanitation in our health facility?
b) What is our role and responsibilities in the control and prevention of communicable diseases in our facility and community at large?
c) What can we do differently to improve sanitation in our working areas within the health facility?

Ask learners if they have any comments or need any clarification in any point.

Session 2

## Practicing hand hygiene in prevention and control of infections in health facilities

*Total Session Time: (3hrs, 2hr theory 1hr practical)*

### Session learning outcomes:

At the end of this session, learners will be able to:

a) Define hand hygiene and hand washing
b) Differentiate hand hygiene from hand washing
c) Describe the importance of hand hygiene
d) Explain effects of improper hand hygiene
e) Apply different techniques of proper hand hygiene
f) Develop strategies to overcome the barriers

### Resources Needed

a) Flip charts, marker pens, and masking tape
b) Whiteboard markers
c) Laptop and projector
d) Hand washing facilities (improvise water tap, soap, antiseptics)

### Session overview

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 1 | 10 min | Presentation | Introduction, Learning outcomes |
| 2 | 15min | Presentation, Buzzing, brainstorming | Definitions of hand hygiene and Hand wash |
| 3 | 30 min | Presentation/ brainstorming | Differentiate hand hygiene & hand washing |
| 4 | 15 min | Presentation/Buzzing | Describe importance of hand hygiene |
| 5 | 20 min | Presentation/Buzzing | Explain effects of improper hand hygiene |

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 6 | 50 min | Presentation/Practice Demonstration and feedback | Application of different techniques of proper hand hygiene |
| 7 | 30 min | Presentation/Practice development of strategies Group assignment | Develop strategies to overcome the barriers |
| 8 | 5 min | Presentation/Buzzing | Key points |
| 9 | 5 min | Presentation | Evaluation |

## Session content

***Facilitator/ learner activities***

a) Introduce the topic and display learning outcomes **Ask** learners to read Learning outcomes

b) **Clarify** displayed learning outcomes

c) Divide learners into groups to define hand hygiene and hand washing

**ACTIVITY:** Participants generate definitions of hand hygiene and hand washing

**ASK** learners to buzz in pairs on 'Definition of hand hygiene and hand wash?'

**ALLOW** few pairs to respond

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

***Definitions***

**Hand hygiene:** include hand washing, care of hands, nails, skin, the use of hand lotions and surgical scrub

**Hand washing:** a process of mechanically removing soil and debris from the skin of hands using plain soap and water

***Differentiate hand hygiene from hand washing***

**ACTIVITY:** Participants work on differentiating hand hygiene from hand washing

**ASK** learners to buzz in pairs on *'Differences between hand hygiene and hand wash?'*

**ALLOW** few pairs to respond

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

## Differences between hand hygiene & hand washing

Hand hygiene is a routine hand washing with antiseptic when there is direct contact with patients susceptible to infection, blood and other body fluids; while hand washing is removal of dirty organic material and transient micro-organisms from the skin.

***Describe the importance of hand hygiene***

**ACTIVITY:** Participants work in pairs to describe importance of hand hygiene

**ASK** learners to buzz in pairs on *'Importance of hand hygiene'*

**ALLOW** few pairs to respond

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

## Importance of hand hygiene

Reducing the number of infection-causing microorganisms present (e.g., through practicing hand hygiene, use of antiseptics on skin prior to surgical procedure). Killing or inactivating infection-causing microorganisms (e.g., hand hygiene with an antiseptic or waterless alcohol hand rub).

Effective hand hygiene, is facilitated by proper hand washing through the use of the following items

a) Running water
b) Soap
c) Antiseptic eg hand sanitizer
d) Personal drying towel, disposable towel, napkin/drier

***Explain effects of improper hand hygiene***

**ACTIVITY:** Participants work on giving of effects of improper hand hygiene

**ASK** learners to buzz in pairs on *'the effects of improper hand hygiene'*

**ALLOW** a few pairs to respond

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

**Effects of improper hand hygiene;** There is high possibility of transmission of contagious diseases (transmitting diseases causing agent from one point to the other) between patients, Health workers and relatives

**Possible barriers of hand hygiene;** According to various studies, it is proven that the rate of hand wash with soap is very low in many of health care facilities. The following are the barriers to hand hygiene;

a) Lack or scarcity of hand wash facilities
b) Water scarcity in health care facility
c) Lack of necessary knowledge to the health workers
d) Behaviour change

***Application of different techniques for proper hand hygiene***

**ACTIVITY:** Participants discuss the various strategies for overcoming the barriers

**ASK** learners to buzz in pairs on *'different techniques for proper hand hygiene'*

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

## Different techniques of proper hand hygiene

**a) Plain hand washing techniques / steps**

i) Thoroughly wet hands
ii) Apply plain liquid soap (antiseptic agent is not necessary)

iii) Vigorously rub all areas of hands and fingers for fingernails and between fingers

iv) Rinse hands thoroughly with clean water

v) Dry hands with a paper towel, dry clean single use towel or air dry them

vi) Use a paper towel when turning off tap if is not elbow controlled or automatic shut off.

**b) Hand Antisepsis**

Similar to that for plain hand washing, here the soap or detergent contain an antiseptic agent (often clorhexidine, iodophors or triclosan) instead of plain liquid soap or detergent.

***When to use?***

*Before*

Examining or carrying out highly susceptible patients (e.g. premature infants, elderly patients or those advanced AIDS)

Performing invasive procedures (e.g. intravascular device)

**c) Antiseptic Hand rub**

***Alcohol-based solutions for hand rub***

i) Add glycerine or sorbitol to alcohol (2ml in 100ml 60-90% ethyl or isopropyl alcohol solution)

ii) Use 5 ml for each application and continue rubbing the solution over the hands until they are dry (15-30 seconds)

- **Note:** it is more effective in killing transient and resident flora than hand washing with antimicrobial agents or plain soap and water but should not be used when hands are visibly soiled.

***Steps***

i) Apply enough alcohol-based hand rub to cover the entire surface of hands and fingers (about a teaspoonful)

ii) Rub the solution vigorously into hands, especially between fingers and under nails, until dry

**d) Surgical hand scrub**

***Steps***

i) Remove rings, watches and bracelets

ii) Thoroughly wash hands and forearms to the elbow with soap and water
iii) Clean nails with nail cleaner
iv) Rinse hands and forearms with water
v) Apply an antiseptic agent
vi) Vigorously wash all surfaces of hands, fingers and forearms for at least 2 minutes
vii) Rinse hands and arms thoroughly with clean water, holding hands higher than elbows
viii) Keep hands up and away from the body, do not touch any surface and dry hands with clean, dry towel or air dry by shaking
ix) Put on sterile gloves.

***Develop strategies to overcome the barriers***

**ACTIVITY:** Participants work on groups to develop strategies on hand hygiene

**DEVIDE** learners into small groups to share and exchange on strategies to overcome the barriers'

**ALLOW** each group to make a brief presentation in plenary

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

In the above activity of developing strategies various groups may come up with variety strategies to overcoming barriers to hand hygiene. However the list may contain some of the following:

a) Installation of adequate hand washing facilities
b) Supplying of adequate items such as liquid soap, antiseptics towel etc
c) Providing health facilities with running water
d) Creating awareness of health workers of all health professions on the importance of improving hand washing practices through:
   i) Wide dissemination of current guidelines for hand hygiene practices
   ii) Involvement of very body at the health facility

iii) Use successful educational techniques including monitoring and positive feedback

iv) Use participatory Performance improvement approaches targeted to all health care staff to promote compliance

e) Behavioural change toward positive attitude and practices

***Key Points Importance of hand hygiene***

a) Techniques of hand hygiene

b) Barriers of hand hygiene

c) Strategies to overcome the barriers

***Evaluation***

An interactive Facilitator-Participant question and answer session

**Asks participants the following questions, and clarify**

a) Differences of hand wash and hand hygiene

b) Why is it important to wash hand after attending each client or after every procedure?

c) Who is at risk if hand hygiene is not properly done and maintained?

d) What should be done to promote hand hygiene?

Session 3

## Session 3: Control of Rodents, Vermin and Pest in Health care facilities

***Total Session Time: 2 hrs***

### Session learning outcomes:

At the end of this session, learners will be able to:

a) Define common terminologies used in the control of rodents, vermin and pest
b) Explain the effects of vermin, rodents and pest in health care settings
c) Apply various techniques in controlling rodents, vermin and pest in health care settings

### Resources Needed

a) Flip charts, marker pens, and masking tape
b) Whiteboard markers
c) Laptop and projector
d) Picture and video clip

### Session overview

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 1 | 10 min | Presentation | Introduction, Learning outcomes |
| 2 | 15 min | Presentation, Buzzing, brainstorming | Definitions of terms related to Vector, Vermin and Pest control |
| 3 | 30 min | Presentation/ brainstorming | Explain the effects of vermin, rodents and pest in health care settings |
| 4 | 40 min | Presentation/ Demonstration | Apply various techniques in controlling rodents, vermin and pest in health care settings |
| 5 | 15 min | Presentation/ Buzzing | Key points |
| 6 | 10 min | Presentation | Evaluation |

## Session content

**Facilitator/ learner activities**

a) Introduce the topic and display learning outcomes
b) Ask learners to read Learning outcomes
c) Clarify displayed learning outcomes
d) Divide learners into groups to define to give definition of vermin, rodents and pest control

***Definition of Rodents, Vermin and Pest control***

**ACTIVITY:** Participants share their understanding on various definitions related to rodents vermin and pests

**ASK** learners to buzz in pairs on *'What are Rodent, Vermin and Pest?'*

**ALLOW** few pairs to respond

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

**Definitions of terms**

**Pest:** Any destructive or troublesome organism" that affects public health, destroys food or property and creates a nuisance eg .bedbug, lice, mice etc.

*"Something we don't like, where we don't want it!"*

**Rodent –**Mammals of the order rodentia characterised by a pair of unremittingly incisors on upper and lower jaw eg mice and rats

**Vermin** are noxious or disguising small animals especially those of small size that appear commonly and are difficult to control as flies, lice, bed bugs , cockroaches, mice and rats

***The effects of vermin, rodents and pest in health care settings***

**ACTIVITY:** Participants share and exchange understanding the effects of rodents, vermin and pest

**DEVIDE** learners into small groups to work on *effects of vermin, rodents and pest '*

**ALLOW** each group to respond or make a presentation

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below with the help of study

In the above activity the participants will have generated different effects brought by rodents, vermin and pest control. However the may include some of the following:

***Effects of pest***

a) Nuisance and annoyance
b) Disease carrier
c) Destruction

***Effects of vermin***

Contamination
Nuisance
Bite and disease carrier

***Effects of rodents***

a) Disease carriers and transmitter eg plague, typhus and typhoid fever etc
b) Very big nuisance on environmental destruction

***Pests are the main triggers of asthma in urban areas:***

a) Dust mites – allergen in faeces
b) Cockroaches – allergens in faeces (Cockroaches and mice have been identified as the major triggers for asthma in urban areas)
c) Mice – allergen in urine
d) Spread infectious diseases - both roaches and rodents can carry dozens of infectious bacteria, viruses, and even fungi. Mice are a reservoir for, and can vector, salmonella.
e) Insect bites- piercing the skin barrier (mosquitoes, ticks, bedbugs, flies)
d) Rat bites

***Various techniques in controlling rodents, vermin and pest in health care settings***

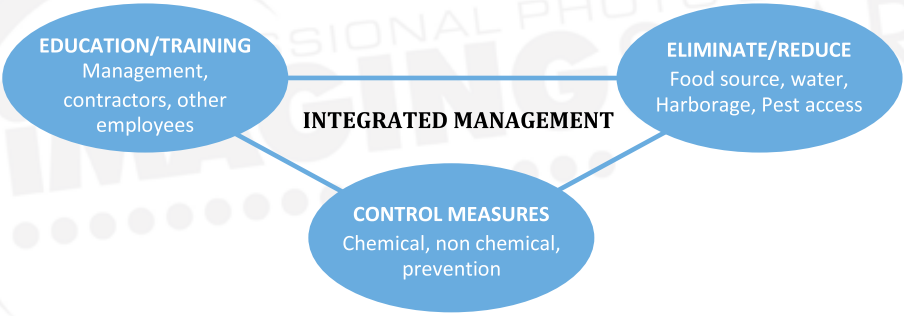
**ACTIVITY:** Participants work in groups to generate possible techniques for controlling rodents, vermin and pest

**ASK** learners to buzz in pairs on 'What are the possible techniques in controlling Rodent, Vermin and Pest?'

**ALLOW** Each group to make a presentation in plenary

**SUMMARIZE** the discussion using the information below

**Diagrammatic illustration showing an integrated method on how to control rodents, vermin and pests**




For effective control rodent, vermin and pest the use of multiple techniques are very important as illustrated above, but the first step should be to identify types of rodents, vermin and pests.

A systematic approach of integrated management and control of rodent, vermin and pest is described below:

## A. Identification /Inspection

Beginning with the exterior of buildings, looking for ways that pests can enter, such as under doors, through unscreened open windows, through pipe penetrations – in fact, through any penetration of walls, especially any hole ¼" in diameter or wider – the minimum size for a mouse to squeeze through

Interior inspection is looking for the same points of entry, plus harborages (cracks and crevices behind cabinets and baseboards, inside appliances equipments etc.), food sources (crumbs, litter, garbage, pet food or faeces), and water sources such as leak, drips – under the sinks.

Focus is areas of concentrated pest activities. In health facilities this may be dust bins, refrigerators, or trash cans

## B. Exclusion & Denial (Harbourage)

Exclusion is addressing penetrations and harbourages found during inspection. They do need periodic replacement. All cracks and crevices should be sealed. This helps prevent rodents from gnawing through the patch. Keeping them out of a home, and sealing their harbourages

### C. Sanitation (Removing all food residues, filth, clutter and others)

Most pests rely on our sloppiness to live. Food and water left is a constant source of high quality food. Even faeces in un-cleaned cat boxes can be food for pests, floors must be clean and grease free; grease is a preferred, and superior, food source for cockroaches, mice and rats

Water is Essential for insects & rats not for mice or bedbugs but mosquitoes needs standing water, Leaks from plumbing are major sources of water for pests

Mosquitoes are, of course, dependent on standing water outdoors – eliminate sources, Water damage is the biggest threat to the integrity of any structure; leaks must be eliminated and damage repaired. Water damage can attract pests, both for water and shelter. Check roof gutters, ground slope (grade), and other possible sources of moisture for repair

### D. Physical controls

Include traps of all sorts – glue traps, snap traps, curiosity traps, fencing etc and most important destruction of bleeding sites by removing water ponds or areas that can retain water

### E. Chemical controls

Shouldn't be the first choice, if necessary, start with low risk Pesticides, including cockroach baits and gel

### F. Ongoing monitoring

Monitors are glue traps that are used to check for pests, to identify pests, and to identify the extent of an infestation. They should be placed against walls, in corners, behind & under cabinets, appliances, etc, when the population is controlled, monitors should be checked monthly to be sure re-infestations are not happening

**Key Points**

i) Some rodents and Vermin of importance in an area
ii) The effects of Rodents, Vermin and Pest in health care settings
iii) Various techniques of controlling Rodents, Vermin and Pest

**Evaluation**

A facilitator- Participant Questions and answers interactive session

***Asks participants the following questions, and clarify***

a) What is the importance of controlling Rodents, Vermin and Pest in HCS?

b) Which are the techniques for control available and affordable in their area?

Summarize the session by emphasizing key points again

Session 4

## Application of decontamination and sterilization methods to reduce cross-infections in Health facilities

***Total Session Time: 4hrs (2hr theory2 hr practical)***

### Session learning outcomes:

At the end of this session, learners should be able to:

a) Define the terms used in decontamination, cleaning and sterilization
b) Mention different types of disinfectants
c) Prepare chlorine solution for decontamination and sterilization
d) Identify effects of improper usage of disinfectants
e) Describe types of sterilization commonly used and its proper procedures (steaming, autoclave, chemical, Decontamination, cleaning and radiation)

### Resources Needed

a) Flip charts, marker pens, and masking tape
b) Whiteboard markers
c) Laptop and projector
d) Disinfectants products, water & instrument used to make dilution)
e) Sterilizer, autoclave and table
f) Video clips on decontamination, cleaning and sterilization

### Session overview

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 1 | 10 min | Presentation | Introduction, Learning outcomes |
| 2 | 20min | Presentation, Buzzing, brainstorming | Definitions of terms used in decontamination and sterilization |
| 3 | 80 min | Presentation/ calculate and prepare solution | Prepare chlorine solution for decontamination and sterilization |

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 4 | 60min | Group assignment and Presentation | Identify effects of improper usage of disinfectants |
| 5 | 40min | Presentation/ play video clips on sterilization procedure | Describe types of sterilization commonly used and its proper procedures (steaming, chemical, Decontamination, cleaning and radiation) |
| 6 | 15 min | Presentation | Key points |
| 7 | 15 min | Assess learning | Evaluation |

## Session content

Facilitator/ learner activities

a) Introduce the topic and display learning outcomes
b) Ask learners to read Learning outcomes
c) Clarify displayed learning outcomes
d) Divide learners into groups to define terms used in decontamination and sterilization

Definition of various terms used in decontamination, cleaning and sterilization

**ACTIVITY:** Participants share knowledge on giving definition of terms used in decontamination and sterilization.

**ASK** learners to work in groups defining various terms such as decontamination, cleaning and sterilization

**ALLOW** a few pairs to give their response

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

**Definition of the following terms**

**Decontamination** is a process that makes inanimate objects safer to be handled by staff before cleaning (i.e. inactivates HBV, HCV, and HIV) and reduces, but does not eliminate, the number of other contaminating microorganisms

Cleaning is a physical removal of all visible dirty, soil, blood or other body fluids from inanimate objects

a) Scrubbing items with a brush, detergent, and water before further processing
b) Removes blood, body fluids, tissue, and dirt
c) Reduce the number of microorganisms (including endospores)
d) Sterilization and HLD may not be effective without proper cleaning

**Sterilization** is elimination of all microorganisms including bacterial endospores from inanimate objects by autoclaving, dry heat, chemical or radiation. Sterilization is an absolute term, i.e. the article must be sterilized meaning the absence of all microorganisms.

***Mention different types of disinfectants, their preparation and use for different purposes***

**ACTIVITY:** Participants share knowledge on different types of disinfectants, their preparation and use

**ASK** learners to brainstorm on 'different types of disinfectant?'

**DEMONSTRATE** the preparation and use for different purpose

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

***Different types of disinfectants and their use***

| Types | Definition | Uses |
|---|---|---|
| High level: Glutarldehyde,2% (cidex) Chlorine and Cetrimide, | Chemicals that kill or inhibit all microorganisms except bacterial endospores on inanimate objects: | Processing instruments and other items. |
| Intermediate: Methylated spirit 60-90% Formaldehyde 8% Iodine or Iodophor solutions | Use to kill microorganisms on inanimate objects | Non critical items/ devices. |
| Low level: Dettol Lysol 5 % Carbolic acid 5% Hydrogen peroxide 3% | Not for use on skin or mucous membranes | Decontaminating floors, surfaces, walls, and furniture and not instruments |

**Preparation and use of different disinfectants for different decontamination purposes Using Liquid Bleach Formula**

Chlorine in liquid bleach comes in different concentrations. You can use any concentration to make a dilute chlorine solution by using the following formula:

$$\frac{\text{[\% chlorine in liquid bleach]} - 1}{\text{\% chlorine desired}} = \text{Total parts of water for each part bleach*}$$

***Example:*** To make a 0.5% chlorine solution from 3.5%** bleach:

$$\frac{[3.5\%]}{0.5\%} - 1 = [7] - 1 = 6 \text{ parts water for each part bleach}$$

Therefore, you must add 1 part bleach to 6 parts water to make a 0.5% chlorine solution.

*"Parts" can be used for any unit of measure (e.g. Litre, or gallon) or any container used for measuring, such as a bottle of beer.

If using bleach powder,* calculate the ratio of bleach to water by using the following formula:

$$\frac{\text{[\% chlorine desired]} \times 1{,}000}{\text{\% chlorine in bleach powder}} = \text{Number of grams of powder for each litre of water}$$

***Example:*** To make a 0.5% chlorine solution from calcium hypochlorite powder containing 35%

**Active chlorine:**

$$\frac{[0.5\%] \times 1{,}000}{35\%} = 0.0143 \times 1{,}000 = 14.3$$

Therefore, you must dissolve 14.3 grams of calcium hypochlorite powder in each litre of water used to make a 0.5% chlorine solution.

* When bleach powder is used, the resulting chlorine solution is likely to be cloudy (milky).

***Exercise: Calculating and mixing chlorine solution***

Activity: Participants work on calculation and mixing of chlorine solution on different concentration and formulation

DIVIDE participants in group to do the following tasks

TASK 1: Dilute liquid chlorine bleach from 3.6% and 4% to 0.5% solution for decontamination

TASK 2: Dilute chlorine powder from 70% and 35% to 0.5% solution for decontamination

TASK 3: How many Chloramine tablet will you need in order to dilute 1000 liters of water?

ASK each group to present their results in plenary

LET all participants share the correctness or otherwise in plenary

SUMMARIZE

**Identify effects of improper usage of disinfectants**

**ACTIVITY:** Participants discuss on the effects of improper usage of disinfectants

**ASK** learners to brainstorm on *'the effects of improper usage of disinfectants'*

**ALLOW** few pairs to respond

**WRITE** their responses on a flipchart/board demonstrate of disinfectants to the class

**SUMMARIZE** the discussion using the information below

The following are the effects of disinfectants when improperly used

a) Corrosive
b) Skin irritation
c) Pungent smell
d) Rust for hospital instruments
e) Damage floor by introducing cracks

Guideline for checking validity of disinfectants

a) Check expiry date
b) Label of container

c) Cover of the container
d) Instructions on how to dilute – if not followed can damage instruments or equipment

NB: It is always important to take precautions in handling disinfectants because they can be harmful if not well prepared, stored and used.

***Description of types of sterilization procedures commonly used in health facilities***

**ACTIVITY:** Participants share their knowledge on types of sterilization

**DEVIDE** learners into small groups about 4-5 members for demonstration on proper procedures of sterilization and the effects of improper usage of disinfectants

**DEMONSTRATE** to each smaller group

**SUMMARIZE** key sterilization points

**There are three types of sterilization commonly used**

a) Steam under pressure (autoclaving or moist heat)
b) Dry heat
c) Soaking in chemicals

### Steam under pressure (autoclaving or moist heat)

**1. Autoclave**

Autoclave means a self locking apparatus for the sterilization of materials by steam under pressure.

Tips to consider when using autoclave

a) Open or disassemble all items to ensure proper sterilization
b) Maintain temperature at 121°C (250°F) and pressure of 106 KPa
c) Set appropriate time for wrapped items 30 minutes and 20 minutes for unwrapped
d) Wrapped or unwrapped items must dry completely before removal from the autoclave

**2 Dry Heat Sterilization**

This is a sterilization type which is accomplished by thermal (heat) conduction

a) Initial heat is absorbed by exterior surface of an item and then passed to the next layer
b) Microorganisms die as their proteins are slowly destroyed.
c) Dry heat sterilization takes longer than steam sterilization because the steam speeds up the penetration of the heat.

***Tips to consider when using dry heat***

a) Adequate temperature correct time with 170 Celsius/ (340F) for 1hr or 160 Celsius (320F) for 2hr
b) Items can be wrapped in aluminium foil or placed in a metal container with a tight fitting lid to prevent contamination prior to use
c) Item should be removed and stored after cooling
d) Time ratio for dry heat are:150 Celsius (300F) for 150min, 140 Celsius (285F) for 180min and 121celius (250F) for overnight

**3. Chemical Sterilization**

***Means the type of sterilization whereby the chemicals are used for sterilization of items***

Tips to consider when using chemical sterilization

a) Open or disassemble items and be sure they are completely covered with the solution
b) Soak items in solution (gluteraldehyde for 10hr or formaldehyde for 24hr)
c) Remove objects from the solution with sterile forceps
d) Rinse with sterile water three times and allow them to dry (air dry)
e) Follow the manufacturer's instructions for soaking
f) Do not add or remove any items once timing has started
g) Rinse with sterile water
h) Store all items dry and use within one week

***Storage after Sterilization***

a) Proper storage is important after any form of sterilization
b) store all items dry
c) Shelf-life of sterilized items is time-dependent in that their sterility cannot be assured if they are kept longer than minimum recommended storage time. However under optimal conditions, wrapped items may be considered sterile as long as they remain intact and dry, while unwrapped

items can only be stored up to one week for if properly in a covered in a sterile container.

d) Store sterile packs in closed cabinets in low-traffic, dry areas

***Sterilization Monitoring Indicators***

a) ***Mechanical indicators;*** Is part of the sterilization equipment. Record and allow observing Time, temperature and pressuring [Timer, Pressure gauge and Temperature gauge]

b) ***Chemical indicators***

***These include:***

i) Tape with lines that change color when the intended temperature is reached.

ii) Pellets in glass tubes that melt, indicating that the intended temperature and time have been reached

Indicator strips that allow the intended combination of temperature, time (and, in autoclave, steam) has been achieved

**c)** ***Biological indicators:*** These indicators use heat-resistant bacterial endospores to demonstrate whether or not sterilization has been achieved (if the bacterial endospores have been killed after sterilization, you can assume that all other microorganisms have been killed)

***Key Points***

i) Different types of disinfectants
ii) Proper preparation of disinfectants
iii) Effects of disinfectants
iv) Types of sterilization and its procedures

***Evaluation***

The facilitator interacts with the participants in a question – answer session to evaluate learning.

***Asks participants the following questions, and clarify***

a) Demonstrate (return demonstration) on how to prepare solution from Liquid-chlorine and bleach
b) Why is important to use disinfectant in health care settings?
c) What are the possible effects of improperly used disinfectants?

Ask students if they have any comments or need any clarification in any point

Session 5

## Proper Handling of soiled linen and beddings to reduce cross infection in health facilities

*Total Session Time: 2.30hrs (2hr theory + 30min practical)*

### Session learning outcomes:

At the end of this session, learners will be able to:

a) Describe and identify different types of linen and beddings
b) Apply appropriate procedures for handling soiled linen/beddings (collection, sorting decontamination, washing and storage)
c) Identify factors hindering the proper handling of soiled linen

**Resources Needed**

a) Flip charts, marker pens, and masking tape
b) Whiteboard markers
c) Laptop and projector
d) Video clip
e) Linen /bedding (soiled)
f) Protective gear (gowns, gloves, decontaminants) water soap

### SESSION OVERVIEW

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 1 | 10 min | Presentation | Introduction, Learning outcomes |
| 2 | 20 min | Buzzing and snowballing | Describe and identify different types of linen and beddings |
| 3 | 30 min | Presentation/ play video clip to demonstrate procedures | Apply appropriate procedures for handling soiled linen/beddings (collection, sorting decontamination, washing and storage) |
| 4 | 60min | Group work and Presentation | Identify factors hindering the proper handling of soiled linen |
| 5 | 15 min | Presentation and Summarize | Key points |
| 6 | 15 min | Learning assessment | Evaluation |

## Session content

***Facilitator/ learner activities***

a) Introduce the topic and display learning outcomes
b) Ask learners to read Learning outcomes
c) Clarify displayed learning outcomes
d) Divide learners into groups to define and identify different types of linen and beddings

***Describe and identify different types of linen and beddings***

**ACTIVITY:** Participants share learning by describing characteristics or features of linen and bedding in health care setting

**ASK** learners to buzz in pairs on *'different types of linen and beddings?'*

**ASK** participants to watch the video clips

**ALLOW** few groups of participants to respond/ comments

**WRITE** their responses/ comments on a flipchart/board

**SUMMARIZE** the discussion using the information below

## Description of terms

***Linen:*** Cloth items used in health setting by patients, staff, clients e.g. beddings, patients clothing, gowns, masks, scrub suits, surgical gowns, drapes and wrappers

***Soap or detergent:*** Cleaning products e.g. bar soap, liquid soap, and powder soaps. They remove debris, dirty, and transient microorganisms from the hands.

***Soiled or contaminated linen:*** Linen collected from the hospital setting regardless of whether they have been visibly dirty.

***Sorting:*** Process of inspecting and removing foreign objects from soiled linens before washing

The hospital has the following linen and beddings

a) Bed sheet
b) Pillow case
c) Surgical attire
d) Clinical coats or theatre gowns
e) Mackintosh/ plastic

***Apply appropriate procedure for handling soiled linen/beddings***

**ACTIVITY:** Facilitator demonstrates on applying appropriate procedures for handling soiled linen/beddings

**ASK** learners to make a return-demonstration in groups on the procedure of handling soiled linen?'

**ALLOW** Other participants to watch and observe the return-demonstration

Ask few participants to critique and make comments

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

**Procedure for handling soiled linen/beddings *(collection, sorting decontamination, washing and storage)***

1. **Collecting and transporting linen**

   After invasive medical/surgical or when changing the patients linen during bed making procedures

   a) Collect used linen in plastic bags or containers with cover
   b) Handle soiled line as little as possible
   c) Do not sort and wash linens at patients care area
   d) Collect and remove soiled clothing's after every procedure
   e) Transport soiled and clean linens separately. If possible label them if separate containers; if only one container is available then transport the dirty ones first, and transport the clean ones last

2. **Sorting linen**

   Sorting area should be:

   a) Away from those used for folding and storing clothes, in the patients care areas, and food preparations
   b) Why?
      i) May contain sharps, needles, broken glasses, sharp teethed scissors

3. **Decontamination**

Beddings may contain dressings which may be wet with blood or body fluids.

a) It is important to remove all particle be it blood clot or tissue which stick on linen
b) Soak on detergent for sometime

**4. Laundering linen**

a) Wash thoroughly before next use all linen used by the patient
b) may be necessary especially if hand washing soiled linen
c) Care during handling the soiled cloth
d) Staff should put on protective eyewear, mask, plastic/rubber aprons, utility gloves, and boots.
e) Linen can be laundered by:
   i) Hand washing
   ii) Machine washing.

**5. Drying, checking and folding linen.**

a) This can be used for both hand washed and machine washed
b) Complete air or machine dry before further process. Air dry is by direct sunlight, keep clothes off the ground, away from dust and moisture.
c) Iron the linen and fold them and store accordingly.
d) When totally dry check for holes or loose stitches and repair or change use

**6. Storing, transporting and distribution of linen**

***6.1 Storing clean linen***

a) Keep in clean storage areas
b) Use physical barriers to separate folding and storage rooms from soiled area
c) Keep shelves clean
d) Handle linen as little as possible

***6.2 Transporting linen***

a) Clean and soiled linen should be transported separately
b) Containers for transporting clothes should be well cleaned
c) Wrap or cover clean linen during transportation

***6.3 Distributing linen***

a) Protect until distributed
b) Do not leave extra linen in patients room
c) Handle clean linen as little as possible

d) Avoid shaking clean linen. It releases dust and lint into the room
e) Clean soiled mattress before putting on clean linen

***NB:*** *The following are protective gears used for person who handling soiled linen: Heavy duty utility gloves, mask, apron and boots*

***Identify factors hindering the proper handling of soiled linen***

**ACTIVITY:** Participants share and learn from each other on 'factors hindering the proper handling of soiled linen?'

**ASK** Learners to brainstorm in plenary on factors which might hinder the handling of soiled linen

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

***The following factors hindering the proper handling of soiled linen***

a) Lack/inadequate knowledge on proper procedures of cleaners/ responsible person
b) Lack of equipments used in handling linen
c) In adequate water supply in health facilities
d) Improper decontamination of soiled linen

***Key Points***

a) Understand the meaning of linen and identify different types
b) Steps in handling soiled linen
c) Factors that may hinder proper handling of soiled linen

**Evaluation**

Facilitator interacts with participants through a question-answer to evaluate their learning

***Asks participants the following questions, and clarify***

a)What are the important terms to understand in handling the soiled linen?
b)What are the important steps to follow in handling the soiled linen
c)What are the factors that could hinder proper handling of linen

***Ask students if they have any comments or need any clarification in any point***

Session 6

## Settings and Housekeeping of health facilities

***Total Session Time: 4.30hr***
***(3hrs theory + 1.30hr practical)***

### Session learning outcomes:

At the end of this session, learners will be able to:

a) Explain the principles of 5s (sorting, setting, shine, standardize and sustain)
b) Apply principles of 5s (sorting, setting, shine, standardize and sustain) in health facilities
c) Explain equipment and disinfectants needed for house keeping
d) Practice housekeeping methods (single, double &triple bucket) including storing of cleaning equipment
e) Identify the effects of improper setting and housekeeping

### Resources Needed

a) Flip charts, marker pens, and masking tape
b) Whiteboard markers
c) Laptop and projector
d) Picture and video clip
e) Demonstration equipments for housekeeping methods (bucket, mopping, rubber etc)

### Session overview

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 1 | 10 min | Presentation | Introduction, Learning outcomes |
| 2 | 40min | Presentation, Buzzing | Explain principles of 5s (sorting, setting, shine, standardize and sustain) |
| | 50 min | Practice 5s principles | Apply principles of 5s (sorting, setting, shine, standardize and sustain) |
| 3 | 30 min | Presentation/ brainstorming | Explain equipment and disinfectants needed for house keeping |
| 4 | 40 min | Presentation/ Demonstration | Practice housekeeping methods (single, double &triple bucket) including storing of cleaning equipment |
| 5 | 70 min | Group work and Presentation | Identify effects of improper setting and housekeeping |

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 6 | 15 min | Presentation/ Buzzing | Key points |
| 7 | 15 min | Presentation | Evaluation |

## Session content

Facilitator/ learner activities

a) Introduce the topic and display learning outcomes
b) Ask learners to read Learning outcomes
c) Clarify displayed learning outcomes
d) Divide learners into groups to explain principle of 5s

***Explanation of principles of 5s (sorting, setting, shine, standardize and sustain)***

**ACTIVITY:** Participants share knowledge on explanation of principles of 5s

**INSTRUCT** learners in pairs to join with another pair(snowballing) to share and merge together their response

**ALLOW** few pairs to respond

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

### Explanation of 5s principles

5S is a Japanese philosophy that focuses on effective workplace organization and standardized work procedures.

It simplifies the hospital work environment, reduces waste and non-value activity while improving quality efficiency and safety of health care services.

It is structured program to systematically achieve total organization, cleanliness and standardization in the workplace such as health care setting.

It is a housekeeping, productivity and safety enhancement technique.

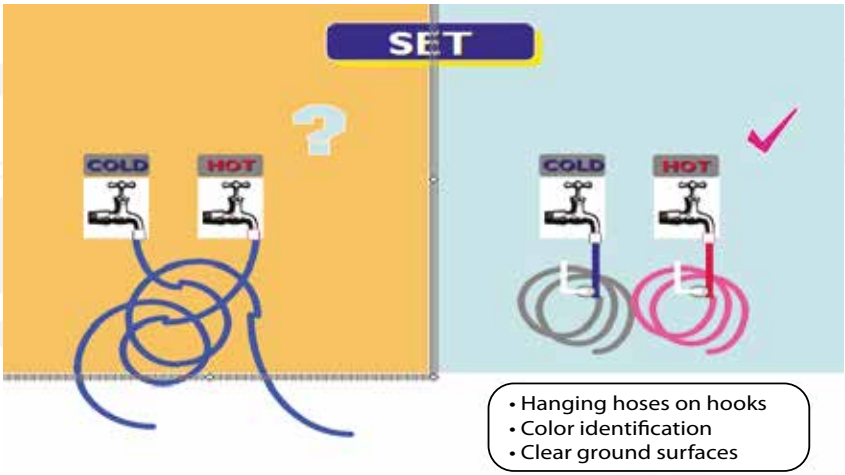
### 5S Principles

In order to achieve high levels of quality, safety, and productivity, workers need to work in environment which is conducive. 5s principles work under the following;

i. **Sorting:** Eliminate all unnecessary tools, equip, parts, and instructions and keep only essential items in health care setting. Dispose or keep in a distance storage area less frequently used items and discard unnecessary items (Photo). The idea is that everything left at health care setting is related to work

ii. **Setting:** Systematic arrangement items for the most efficient and effective in health care setting (eg area for drugs, nursing station, decontamination and so forth). The place for each item should be clearly labelled or differentiated. Each instrument, part, supply, or piece of equipment should be kept close to where it will be used by staff

***Illustrative diagram to show how set can be done properly on the right as compared to the one on the left***




iii. **Shine:** Keep the workplace in health care setting tidy and organized.

At the end of each shift, clean the work area and be sure everything is restored to its place.

A key point is that maintaining cleanliness should be part of the daily work–no an occasional activity initiated when things get too messy

Daily cleaning is helpful in identifying damages to equipment – helps in protection equip and loss of productivity

Everyone should see the 'workplace' in health care setting through the eyes of a visitor - always thinking if it is clean enough to make a good impression.

Shine is a cleaning with meaning and beautifying. Taking care of one's working place and tools. Failure to do so would indicate an irresponsible worker.

***Illustration showing how to maintain shine in healthcare facility by each individual's participation in his/her own territory (place of work)***


**iv. Standardize:** Work practices should be consistent and standardized.

All work stations for a particular job should be identical. Everyone as frontline workers should know exactly what his or her responsibilities

The goal of standardization is to create best practices and to get each team member to use the established best practices the same way.

Roles and responsibilities must be clearly and consistently applied. This can be accomplished through visual controls such as color-coding, flow charts, checklists, and labeling approach.eg

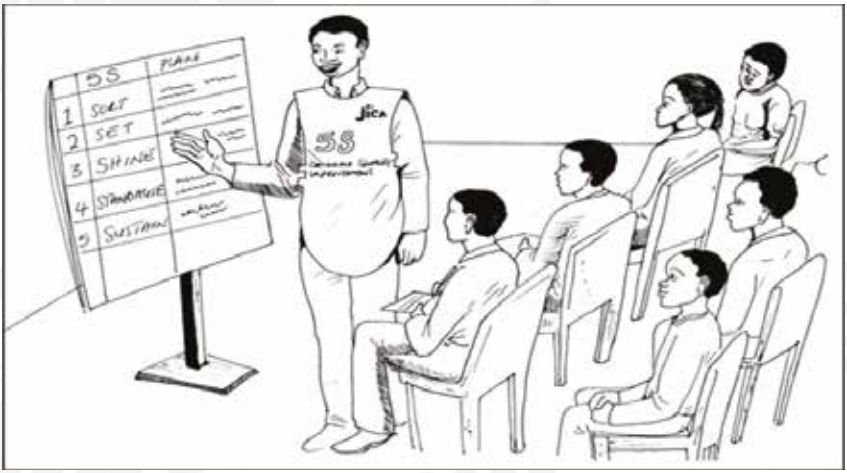
Shine must be well maintained in health care facility. The importance of maintaining rotation schedule is to remind cleaners to be responsible in their duties so that they abide by them.

***The table below illustrate example of a cleaning rotation schedule***

| Rotation schedule | Cleaning day | | Removal HCW | |
|---|---|---|---|---|
| | Day shift | Night Shift | Day Shift | Night shift |
| Monday | Mafunda | Abasi | Mafunda | Abasi |
| Tuesday | Shineni | Haule | Shineni | Haule |
| Wednesday | Haule | Christina | Haule | Christina |
| Thursday | Abasi | Mafunda | Abasi | Mafunda |
| Friday | Christina | Shineni | Christina | Shineni |

| Activity | Responsibility | Remarks |
|---|---|---|
| Mopping the entire area at the end of the shift | Hassan | Done |
| Empty health care waste as needed at the end of every shift | Michael | Not done |

The 5s Principles should be continuous in practice and sustainable. Implementers of 5s principles should continuous learn on the practices and enforcement of principles. The diagram below is an illustration of how health providers continue to learn and update themselves of 5s principles on a day to day basis.




v. **Sustain:** The achievements of setting, sorting shine and standardized need to be sustained. 5S is a habit which need to be continually improved and therefore should be regularly supervised

***Explain equipment and disinfectants needed for housekeeping***

**ACTIVITY:** Participants share their understanding and explanation of equipment and disinfectants needed for housekeeping

**ASK** learners to buzz in pairs on 'List some equipments needed for housekeeping'

**ALLOW** few pairs to respond

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

***Cleaning equipment and storing For daily cleaning you should have:***

a) Clean water in your bucket.
b) Soap (detergent / chemicals)
c) Mops – so you can change after each room
d) Clean mops and cloths should be dried after being washed, to prevent growth of bacteries.
e) Have a clear distinction between clean and unclean equipment.
f) A shaft for cleaning high up in the room / in the ceiling
h) If a trolley is available – keep it clean

***Some equipment and disinfectants needed for house keeping***

a) Bucket mop
b) Mop
c) Cloth (wet)
d) Trolley
e) Rubber &Hard brush& soft

***The pictures below ilustrate the examples of some cleaning equipment and materials used for house keeping in health facilities***

**Detergents /Soap**

**This is a** Cleaning product (disinfectant) in the form of bar, liquid soaps or powder help to remove dirty and reduce number of microbes on the surface.

**NB:** if the detergents are not used properly resulting in the following effects:

a) Abrasion, scratches and damage the surfaces, it may cause a breeding ground for bacteria.
b) Therefore you should not use such detergents when cleaning in the hospital.

**pH scale of Detergents**

Detergents can be acidic, alkaline and neutral

**Neutral chemicals used** for daily cleaning of most surfaces, removes most kinds of dirt.

**Alkaline chemicals** for daily use in sanitary rooms and general cleaning and removes grease and oil

**Acidic chemicals** for periodic cleaning of sanitary rooms (once a week) and removes calcium, rust and other deposits

**Note:** Neutral for floor / walls / interior and Alkaline and acidic for toilets

a) Never mix different detergents
b) Always read the user instructions carefully
c) Follow specified precautions
d) Ask if you are uncertain

***Practice housekeeping methods (single, double &triple bucket) including storing of cleaning equipment***

**ACTIVITY:** Participants learn and practice methods of housekeeping and storage of cleaning equipment

**DEMONSTRATE** to learners in group of 4-5 on 'Methods of housekeeping'

**ASK** each group to make a return to demonstrate in pairs as others observe and assess their performance

**LET** each group comment on the exercise

**SUMMARIZE** the discussion using the information below

## Cleaning

**Why do we clean the health facility?**

a) To remove the possibility for microorganisms to grow
b) To take care of the inside of the buildings
c) To make it look nice for the patients, their families and those who work at the hospital

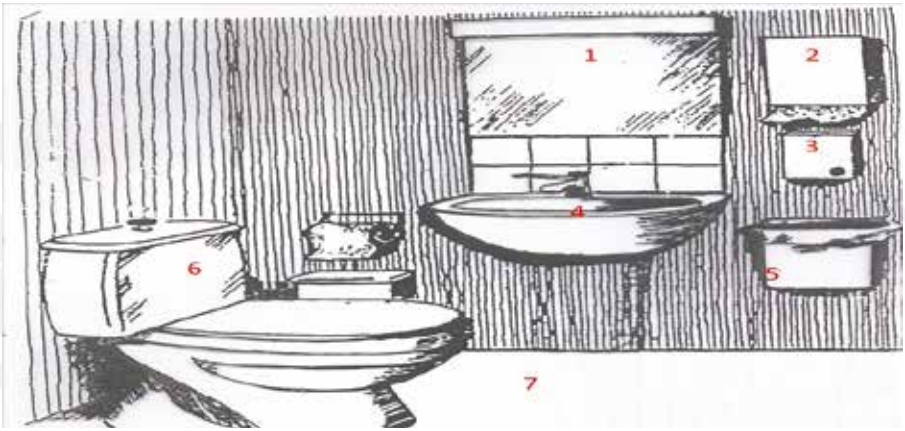
**Why do we clean contact points?**

Contact points things/places that are likely to be touched by many people in health facilities. We call them contact points and are potential infectious. Thus it is important to clean them.

**Examples of contact points are:**

a) Door handle
b) Door wing / door edges
c) all kinds of switches
d) all types of dispensers
e) bed panel, bed horse and headboard
f) chair armrest
g) bedside, handles on cupboards and drawers
h) sink and armature
i) flush button on the toilet
j) window handles
k) Toilets and latrines

***Diagram showing areas to concentrate when cleaning the toilet (label the areas on the diagram below)***



**Cleaning Methods**

Cleaning should start with the least soiled area and move to the dirty area and from high surface to low surface.

**Common cleaning methods:**

**Wet mopping;** common and most preferred method

1. **Single bucket** cleaning solution, change solution when dirty.
2. **Double bucket technique:**
   a) One contains cleaning solution and the other rinsing water.
   b) Rinse and wrung the mop before dipping into the cleaning water

**Advantages:** Fewer changes required and Cost effective

**Triple bucket technique:**

The third bucket used for wringing out mop before rinsing extends life of rinsing water.

**Flooding** followed by wet vacuuming recommended for surgical suite if possible

**Dusting:** for cleaning walls, ceilings, doors, windows, furniture and other environmental surfaces.

- Wet clean cloth or mop with cleaning solution.

**NOTE: a)** Avoid dry dusting and never shake the dry dusters or mops
**b)** Perform dusting in systematic ways.

***Cleaning schedule, Every health orderlies should have a cleaning schedule that tells them:***

a) What area to clean every day.
b) The frequency of cleaning
c) What process to use

A «map» can be useful to show the area

**Map showing the location of cleaners using colors**

1. Cleaner X will be responsible for area yellow
2. Cleaner Z will responsible for area Green etc

***Schedule and procedure for specific areas***

a) Housekeeping plans should be planned, written and closely followed.

b) Walls, windows, ceiling doors including door handles should be dump dusted routinely with damp cloth, water and detergent.

c) Chairs, lamps, tables, table-tops, beds, handrails, lights etc, wipe daily with damp cloth water and detergent or whenever they are soiled

d) Non critical equipments e.g. stethoscope, blood pressure cuffs, wipe daily with a damp cloth, detergent and water. If soiled with blood or body fluids, disinfect before cleaning and reuse.

e) **Floors:** Clean at least three times a day or as needed with wet mop ,detergent and water. Use disinfectant if contaminated with blood or body fluids

f) **Sinks:** Scrub frequently with a cloth or brush and disinfectant solution

g) **Toilets and latrines:** Scrub frequently at least 3 times a day or as needed with a mop. cloth or brush and a disinfectant cleaning solution (e.g. harpic)

h) **Patient's rooms:** at least 3 times per day and after discharge.

i) **Equipments used in isolation rooms should be disinfected.**

j) **Curtains:** change and clean weekly and when soiled.

k) **Procedure rooms:** wipe horizontal surfaces, equipments, furniture used for procedure with a disinfectant cleaning solution. Decontaminate soiled equipments before cleaning.

l) **Examination rooms:** wipe horizontal surfaces with a disinfectant cleaning solution after each procedure and whenever visibly soiled. Linen/cover on the examination table should be changed after each procedure. Decontaminate before cleaning blood and other body fluid spills

m) **Carpets:** Vacuum carpets daily in patient's rooms, offices and conference rooms.

n) **Soiled linen:** collect soiled linen X 3 daily or more often as needed in leak-proof containers.

***Step 5: Identify effects of improper setting and housekeeping***

**ACTIVITY:** Participants share knowledge on 'the effects of improper setting and housekeeping'

**ASK** learners to brainstorm on 'the effects of improper setting and housekeeping'

**WRITE** their responses on a flipchart/board

**SUMMARIZE** the discussion using the information below

***Identify effects of improper setting and housekeeping***

a) Spread infections to the patients, workers and relatives
b) Workers will spend much time looking for items
c) Difficult to ensure proper cleaning
d) Hospital harboured by vermin and other insects
e) A dirty and untidy workplace in health care setting leads to pose workers and patients in higher risk of getting infections and reduce motivation
f) It reflect Organization image (poor services provision)
g) Health and safety of everybody not ensured
h) Create negative impressions on customers
i) Decrease efficiency of organization and increase cost

Session 7

## Accessibility of adequate water supply and its importance for prevention of infections in health care facilities

*Total Session Time: 3hrs (2hr theory1hr practical)*

### Session learning outcomes

At the end of this session, learners will be able to:

a) Explain the importance of water in health care facilities
b) Describe source of water supply used in health facilities
c) Determine the minimum standard of water required in health facilities (formula)
d) Conduct regular water sampling and treatment

**Resources Needed**

a) Flip charts, marker pens, and masking tape
b) Whiteboard markers
c) Laptop and projector
d) Water sampling equipment eg. bottles, labels, kit for rapid water analysis spirit, cotton etc.

### Session overview

| Step | Time (minutes) | Activity and Method | Content |
|---|---|---|---|
| 1 | 10 min | Presentation | Introduction, Learning outcomes |
| 2 | 35min | Presentation, Buzzing, brainstorming | Explain the importance of water in health care facilities |
| 3 | 45 min | Presentation/ brainstorming | Describe source of water supply used in health facilities |
| 4 | 30 min | Assignment on Calculation/Present | Determine the minimum standard of water required in health facilities (formula) |
| 5 | 30 min | Presentation/Buzzing | Conduct regular water sampling and treatment |
| 6 | 15 min | Presentation/Buzzing | Key points |
| 7 | 15 min | Presentation | Evaluation |
| 7 | 15 min | Presentation | Evaluation |

## Session content

**Facilitator/Learner activities**

a) Introduce the topic and display learning outcomes
b) Ask learners to read Learning outcomes
c) Clarify displayed learning outcomes
d) Divide learners into groups to conduct water sampling procedures and treatment

**ACTIVITY:** Students take part in their own learning by sharing knowledge on the importance of water in Health Care Facilities
**ASK** learners to brainstorm on the Importance of water in HCFs
**ALLOW** few pairs to respond
**WRITE** their responses on a flipchart/board
**SUMMARIZE** the discussion using the information below

**Importance of water in HCF**

a) Availability of adequate water in healthcare facilities minimizes the risk of infection for patients, delivery rooms, health workers and visitors.
b) Water used for drinking, washing and other uses is a basic necessity for life to workers, patients and relatives in healthcare facilities.
c) Without an adequate and wholesome water supply, health cannot be maintained, therefore, public water supply must be potable, palatable and wholesome
d) Water is necessary in promoting personal hygiene and in cleaning the environment. It is impossible to have a clean and sanitary environment without water

***Note:*** In low income settings, an estimated 10-15% of maternal deaths are due to infections that can be linked to unhygienic conditions (UNICEF, 2014)

***Identify sources of water supply used in health facilities***
**ACTIVITY:** Participants share and exchange knowledge on what they know about water sources used in health facilities
**ASK** learners to buzz in pairs to identify source of water supply used in HCFs
**ALLOW** few pairs to respond
**WRITE** their responses on a flipchart/board
**SUMMARIZE** the discussion using the information below

**Descriptions of water source used in health facilities**

Ground source- underground (dug, tube, jet well and spring) and surface (lake, rivers and ponds). The health facilities have many options to decide the best source and easy way to obtain water

**Advantages of underground water:**

a) It is comparatively likely to be free from disease causing micro-organism, it can be used without further treatment if properly treated and preotected immeaditely after the completion of construction work on the well or other source where groundwater is available.
b) It is not exposed for evaporation and is used as natural storage in underground....groundwater can be found near a family or a community

**Disadvantages of underground water**

a) It needs pumping unless it comes from a spring
b) It may contain excess amounts of dissolved minerals.
c) It is poor in oxygen content

**Rainwater**

In regions where rainfall is abundant and frequent, rainwater can be a good source of water supply for healthcare facilities.

The storage of rainwater is very important in healthcare facilities especially in the areas which face long dry seasons.

The process of harvesting rain water in health facilities should be emphasized. This is particularly true where groundwater is difficult to obtain or, if obtainable, it is for any reason unsatisfactory

**Advantages of Rainwater:**

a) It is a reliable source even if it rains once or twice a year only
b) It is cheap and a safe means of water supply that may not need pipes or pumps and is available at the doorstep.
c) Its storage needs no fuel, no spare parts, but only very little skill to construct and maintain

***Determine the minimum standard of water required in health facilities***

**ACTIVITY:** Participants share knowledge of the minimum standards of water for Health facilities by working on exercise to calculate minimum water needed per day in a healthy facility

**DIVIDE.** Learners into small groups to calculate minimum standard of water required in health facilities

Give exercise to work on determination of minimum standards (see below)

**ALLOW** each group to make presentation in plenary

**LET** Participants critique and discuss the results of each group

**SUMMARIZE** the discussion using the information below

**Water Requirements**

The availability of an adequate and safe supply of water is one of the major requirements for the control of a large number of diseases, and to advance the standard of good general health within a healthcare facilities or community.

One of the main duties of a health worker, indeed of any Manager in health facilities, should therefore be to see that a safe and plentiful water supply is available to all segments

**Water quantity in HCFs**

*Health centers and hospitals*

5 litres per patient/visitor at outpatient per day

40–60 litres per inpatient per day

Average amount of water needed per staff is 60 liters per day

Additional quantities may be needed for laundry equipment, flushing toilets, etc.

Cholera centers 60 litres per patient per day

Eg Kiomboi Hospital has 30 bed capacity(inpatient), 20 patients attended in outpatient and the total number of workers is15. Calculate the amount of water that will be used per day in that facility.

AWHCF = (no. of pts in OPDx5lts)+(Inpatients x60)+(no, of staff x 60ltrs)
= 20x5 ltrs+ 30x60ltrs+ 15x60lts
= 100lts+1800ltr+900ltrs= 2800ltrs/day
+ 1400ltrs (1/2 of the total amount as additional)
= 4200 liters will be required in Kiomboi Hospital/day

***Exercise 1***

*Donge hospital has 100 bed capacity with an average of 200 outpatients and 60 in-patients a day. It also has 20 health workers working daily. The hospital comprises other departments such as theater, laundry and maternity. Calculate the amount of water required in that facility per day and its monthly total consumption.*

***Exercise 2***

*For the amount of water calculated in exercise 1 above, how much amount of chlorine will be required to treat such amount of water given that 1 tablet (mg) treat 20ltr of water.*

***Water quality for health centers:*** All water for hospitals, health centers and feeding centers should be treated with chlorine or another residual disinfectant.

In situations where water is likely to be rationed by an interruption of supply, sufficient water storage should be available at the centre to ensure an uninterrupted supply at normal usage levels

***Conduct regular water sampling and treatment***

**ACTIVITY:** Participants share knowledge and learn on the procedure of conducting regular water sampling and water treatment

**ASK** learners to buzz in pairs to perform regular water sampling and treatment

**DEMONSTRATE** to the participants on how to conduct procedure for water sampling from a tap

**DIVIDE** participants in groups of 4 – 5 and let each group practice how to conduct water sampling technique

**ASK** each group to comment on the procedure of water sampling

**SUMMARIZE** the discussion using the information below

**Perform regular water sampling and treatment Surveillance of water quality**

It is essential health measures are taken to ensure water quality in-order to protect the public from water borne diseases and other water related diseases.

The following below are elements of conducting water surveillance:

a) Sanitary survey
b) Sampling
c) Water analysis

**Sanitary survey**

Is an on-the-spot inspection and evaluation by the qualified person of the entire water supply system. The purpose of the survey is detection and correction of faults and deficiencies

A sanitary survey is essential for adequate interpretation of laboratory results

**Sampling procedure**

Sampling of water should be done with the thoroughness of a surgical operation in which the adherence with aseptic techniques is mandatory in-order to prevent infection. It should be carried out by competent and trained skilled such as Environmental Health Officer and Water Quality Officer.

The health care facility should provide safe water. If it has water storage tanks, they should be cleaned regularly and the quality of water should be sampled periodically to check for bacterial contamination.

***Collection of samples from a tap***

a) The tap should be open fully and allow water to run to waste at least for 2 to 3 minutes in-order to flush the anterior of the nozzle and to discharge the stagnant water in the service pipe.
b) The tap should be sterilized by heating it with either Blow lamp or with an ignite piece of cotton soaked in the Methylated spirit
c) Then the tap should be cooled by allowing the water to run to waste before the sample is collected.
d) The bottle should be held near the base with one hand and the stopper and paper cover over it, removed together and held in the fingers
e) The sample bottle should be filled from a gentle stream of water from the tap and avoiding splashing

The collection of samples from taps which are leaky should be avoided because the water might cause the contamination

**Collection a samples from rivers, lakes, Wells, Reservoirs etc**

***Rivers***

a) Sample should not be taken too near the lake or river bank or too far away from the point of drawing off.

b) **Fill the bottle:** Holding the bottle by the lower part, submerge it to a depth of about 20cm, with the mouth facing slightly upwards. If there is a current, the bottle mouth should face towards the current.

The bottle should then be capped or stopper

***Sampling from dug wells and similar sources***

a) Prepare the bottle with a piece of string, attach a clean weight to the sampling bottle.

b) Attach the bottle to the string: Take a 20-m length of clean string rolled around a stick and tie it to the bottle string.

c) **Lower the bottle:** Lower the bottle, weighed down by the weight, into the well, unwinding the string slowly. Do not allow the bottle to touch the sides of the well.

d) **Fill the bottle:** Immerse the bottle completely in the water and lower it well below the surface without hitting the bottom or disturbing any sediment

e) **Raise the bottle:** Once the bottle is judged to be filled, rewind the string on the stick to bring up the bottle.

f) **Transport and storage of sample**

The sample should be kept in ice until is taken for analysis

All such iced samples should be taken for analysis with 48 hrs after collection

Storage in glass or polyethylene bottles at a low temperature (e.g. 4 °C) in the dark is recommended.

g) Samples not preserved in this manner should not be accepted for bacteriological examination the time, date of collection and dispatch

**Water analysis**

***Physical Quality***

The ordinary consumers judge the water quality by its physical characteristics. These are; Turbidity, Color Odour and Taste

***Chemical analysis***

These are derived from industries and agricultural activities (dissolved compounds from fertilizer). These are Nitrates, Fluorides', Arsenic, Cyanide etc

***Bacteriological analysis***

- Use of contaminated water in health care facilities may affect patient, service providers and relatives in different ways. Conducting bacteriological anaylis is the only way of detecting the presence of pathogens (bacteria, viruses, parasites) in the water. These microorganisms are common in causing different conditions like skin rashes, neonatal sepsis and diseases including water borne diseases. It is always important to understand when conducting bacteriological analysis that presence of any coli form in sample is a gross indicator of faecal contamination. Therefore, the result of water analysis should indicate completely free from faecal coliforms per 100 mls at the point of water delivery

**NB;** Facility Health officer/DHO or any qualified staff in this matter has to take regular check up of water quality at the facility

**Key points**

a) Understand importance of water supply in health care facilities
b) Water source in HCFs
c) Minimum standard of water supply required in HCFs
d) Water sampling procedures and treatment

**Evaluation:** Facilitator interact with the learners on the important topic of water with regards to its importance, water source, water standards procedures and sampling to evaluate their learning through question and answer session

***Ask participants the following questions to:***

a) Explain the importance of water supply in HCFs
b) Identify various water sources in HCFs
c) Determine minimum standards of water supply required at HCFs
d) Conduct water sampling and treatment procedures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