



THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH AND SOCIAL WELFARE

**Quality Improvement –
Infection Prevention and
Control Orientation
Guide for Participants**

July, 2009



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The ACCESS Program is the U.S. Agency for International Development’s global program to improve maternal and newborn health. The ACCESS Program works to expand coverage, access and use of key maternal and newborn health services across a continuum of care from the household to the hospital—with the aim of making quality health services accessible as close to the home as possible. JHPIEGO implements the program in partnership with Save the Children, Constella Futures, the Academy for Educational Development, the American College of Nurse-Midwives and Interchurch Medical Assistance.

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July 2009

Quality improvement series

1. Tanzania Quality Improvement Framework; September 2004.
2. National Infection Prevention and Control Guidelines for Healthcare Services in Tanzania; November 2004.
3. National Infection Prevention and Control Pocket Guide for Healthcare Service in Tanzania; February 2007.
4. Mwongozo wa Taifa wa Kukinga na Kuthibiti Maambukizo katika Utoaji wa Huduma za Afya; Kiongozi cha Mfukoni kwa Watoa Huduma za Afya Tanzania; April 2007
5. Implementation Guidelines for 5S-CQI-TQM Approach in Tanzania; May 2009
6. Quality Improvement – Infection Prevention and Control Orientation; Guide for Participants; July 2009.

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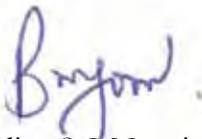
Foreword

Development in the health care system of Tanzania is remarkable and includes expansion of the health facilities network, improvement of the infrastructure and introduction of the health insurance. The current trend of decreasing child mortality, shrinking prevalence of infectious diseases is accountable to these developments. Further to this, Disease patterns, system requirements for addressing health challenges and demands from the clients are changing. There is a demand for a more efficient and cost-effective health care system. People want a system that is safe for both providers and patients, and free from errors. These challenges call for a pragmatic approach to quality improvement in health care, at all levels, all over the country.

In this context, quality improvement in healthcare, is a systematic process of assessing performance of the health system and its services, identifying shortfalls and their causes, and introducing measures to improve quality and monitor the impact. It is a system which is measured by its processes and outcomes. Client satisfaction, hospital infection rates, and morbidity and mortality, are examples of quality indicators. Infection Prevention and Control (IPC), is an effective strategy intended to reduce infection rates, to both staff and patients/clients, thereby improving quality indicators. Improving quality by adhering to agreed standards of care which are evidence-based contributes to the improvement of IPC. Treating infection is costly and even if it succeeds, it may lead to long debilitating conditions. Provision of quality health services will prevent infections at all settings and related complications.

The intention of this Quality Improvement and Infection Prevention and Control (QI-IPC) Orientation Guide for participants, is to provide health providers with readable and user friendly basics of Quality Improvement concepts, IPC practices and logistics management, while incorporating behavior change and communication, to improve quality in health care.

The Ministry of Health and Social Welfare, in collaboration with the development partners, is dedicated to supporting implementation of quality improvement and IPC, at all levels of health care settings, in Tanzania. With the formation of quality health teams and the dedication of health providers, the improvement of quality of health in Tanzania, is ensured at all levels of care. The Ministry of Health and Social Welfare will appreciate and accept additions, suggestions and comments, from users of the guide, so as to further enrich it.



Ms Blandina S. J. Nyoni

PERMANENT SECRETARY

Acknowledgement

The Quality Improvement and Infection Prevention and Control (QI-IPC) Guide, is a product of intensive work, coupled with wide consultations and collaboration, between the Ministry of Health and Social Welfare, through the Health Services Inspectorate Unit and the ACCESS/jHPIEGO programme. The MoHSW wish to extend its sincere gratitude, to all who have contributed in the development of this document, either technically or by providing materials or their participation.

In particular, the Ministry would like to acknowledge the technical and financial support, from USAID, through the ACCESS/jHPIEGO programme, during the development of this document and the support from MS. Nora Barker, a consultant, for reviewing the initial QI-IPC Orientation Guide document and her technical advice, on implementation of this guide. The MoHSW recognizes the efforts by the Health Services Inspectorate Unit of the MoHSW. The collaborative approach and guidance reflected in this guideline, will directly benefit the targeted healthcare providers, as well as, promote the well being of Tanzanian communities.

The Ministry acknowledges the support from different partners, both local and international, who contributed to the finalization of this document. The inputs from other experts in the MoHSW, TGPSH, and JSI, whose list is in the appendix, greatly enriched the final output. We thank Dr. Henock AM.Ngonyani, the head of the Health Services Inspectorate Unit, for his tireless efforts, in coordinating the whole process of developing this document.

We would like to extend our gratitude, to all whom, after being exposed to this Orientation Guide, will use it wisely to offer quality health services to the people.



Dr Deo M. Mtasiwa
CHIEF MEDICAL OFFICER

Abbreviations

3TC	-	Lamivudine
ACCESS	-	Access to clinical and community maternal, neonatal and women’s health services
AIDS	-	Acquired Immune Deficiency Syndrome
ALT	-	Alanine aminotransferase
AMCR	-	Average monthly consumption rate
ARV	-	Antiretroviral
BBP	-	Blood borne pathogens
BCC	-	Behaviour Change Communication
CB	-	Closing balance
CDC	-	Center for Disease Control
CHMT	-	Council Health Management Team
CQI	-	Continuous Quality Improvement
CSSD	-	Central Sterilization Supply Department
CTC	-	Care and Treatment Clinic
DMO	-	District Medical Officer
EFV	-	Efavirenz
FBP	-	Full blood picture
FEFO	-	First Expired First Out
FIFO	-	First In First Out
HBIG	-	Hepatitis B Immunoglobulin
HBV	-	Hepatitis B virus
HCV	-	Hepatitis C virus
HCWM	-	Health care Waste Management
HFPSAT	-	Health Facility Performance and Self Assessment Tool
HIV	-	Human Immunodeficiency Virus
HLD	-	High Level Disinfection
ICU	-	Intensive Care Unit
IEC	-	Information, Education and Communication
ILS	-	Integrated Logistics System
IPC	-	Infection Prevention and Control
IUCD	-	Intrauterine contraceptive device
IV	-	Intravenous
JICA	-	Japanese International Cooperation Agency
JSI	-	John Snow, Inc.
LFT	-	Liver function test
LMIS	-	Logistics Management Information System
M&E	-	Monitoring and evaluation
MMIS	-	Making Medical Injections Safer
MoHSW	-	Ministry of Health and Social Welfare
MRSA	-	Methicillin Resistant <i>Staphylococcus aureus</i>
MSD	-	Medical Store department
OPD	-	Out-Patients Department

ORS	-	Oral Rehydration Solution
PEP	-	Post-Exposure Prophylaxis
PPE	-	Personal Protective Equipment
QI	-	Quality Improvement
QI-IPC	-	Quality Improvement for Infection Prevention and Control
QIT	-	Quality Improvement Team
R&R	-	Requisition and Report
RFT	-	Renal function test
RHMT	-	Regional Health Management Team
SIGN	-	Safe Injection Global Network
SOPs	-	Standard Operating Procedures
SWOC	-	Strengths, Weaknesses, Opportunities and Challenges
TB	-	Tuberculosis
TGPSH	-	Tanzania German Programme to Support Health
TP	-	Total Parts
TQIF	-	Tanzania Quality Improvement Framework
TQM	-	Total Quality Management
VCT	-	Voluntary Counselling and Testing
WHO	-	World Health Organization
ZDV	-	Zidovudine

Introduction

Implementing proper infection prevention practices is one of the pre-requisites for ensuring safe health care delivery and therefore improving quality of health services. The purpose of this orientation guide is to improve quality of health services by assisting district supervisors, trainers and other resource people in their efforts to orient policy makers at the district level and health providers to the IPC guidelines.

The Goal and Objectives of the Quality Improvement - Infection Prevention and Control (QI-IPC) Orientation Guide for Participants

Goal

- To provide a reference for health care workers in health care settings in Tanzania
- To guide staff in supporting implementation of QI and IPC best practices

Objectives

Using this QI-IPC orientation guide will enable health care workers to:

- Describe the basic elements of Quality improvement (QI), Infection Prevention and Control (IPC), Behaviour Change Communication (BCC) and logistics required for a functioning health facility.
- Describe how practicing these elements of QI, IPC, logistics and BCC contribute to improving quality of care.

Module One

Quality Improvement

Session One

The Concept of Quality Improvement in Health Care

By the end of this session, participants will be able to:

- Explain the commonly used terms in health services quality improvement
- Describe the quality improvement cycle
- Describe the principles of quality improvement
- Describe the dimensions of quality in health care
- Describe the stages of improving quality of a health facility

1.1.1 Definitions

Quality

Quality simply means “performance according to standards” or, “doing the right thing, the right way, at the right time”. It is the most desirable outcome of an intervention in terms of maximum well-being for the client, considering:

- Risks and benefits
- Gains and losses
- Client satisfaction
- Efficiency
- Individual and social balance

Quality of health care

A degree of performance in relation to a defined standard of intervention, known to be safe and have the capacity to improve health within available resources.

Standard

A statement of the “desired achievable” (rather than observed) performance or value with regard to a given parameter.

Performance Standards (in the health care system)

Specifications, which if attained, would lead to a minimum acceptable level of quality in the health care delivery system. Serve as basis for making judgments on the level of excellence for performance.

Characteristics of a performance standard:

- **Clear:** Understood in the same way by everyone; not subject to misinterpretations. The standards tell providers not only what to do but also how to do it.
- **Reliability:** Leads to same result each time it is applied.

- **Realistic or applicable:** Can be achieved within existing resources (human, material and financial).
- **Validity:** Based on scientific evidence (based on current data) and acceptable experience which shows the relationship between standard and desired output.
- **Measurable:** States what could be measured to ascertain that standards are being implemented and bringing about desired changes.

Note: Develop performance standards based on international guidelines, national policies or guidelines, and site-specific requirements.

Quality improvement in health care

A systematic participatory effort to improve the quality of health system development and the delivery of health care services, including all methods of performance assessment and readjustment according to all available resources, thereby serving the health and welfare of the community. in other words a systematic process to:

- assess performance of health system and its services,
- identify shortfalls between performance and standards as well as their causes,
- introduce remedial measures to improve performance
- Involve communities and other partners in the process for ownership and sustainability
- Monitor and measure the impact.

Indicator:

A measurable variable or characteristic that can be used to determine the degree of adherence to a standard or achievement of quality goals.

Examples of indicators:

- Bed occupancy rate
- Average length of stay at a facility
- Percentage of deliveries by caesarean section
- Percentage of children below one year who had completed third dose of DPT-HB immunization

Quality Improvement Team

A group of selected, motivated, multi-level staff tasked to oversee improvement on the day-to-day performance in a health facility, conduct periodic performance assessments and liaise with the management on improvement strategies and activities.

Continuous Quality Improvement (CQI)

This is a non-stop, day-to-day process to improve the standard of work followed by all members of the workforce for achieving the best outcome of services.

Total Quality Management (TQM)

A method by which management and employees can become involved in the continuous improvement of the services aimed at embedding awareness of quality in all organizational processes.

Performance Improvement

A process that identifies the health services delivery gap between the standard and actual performance, and develops and implements appropriate interventions to address the gap.

Figure 1. Total quality improvement



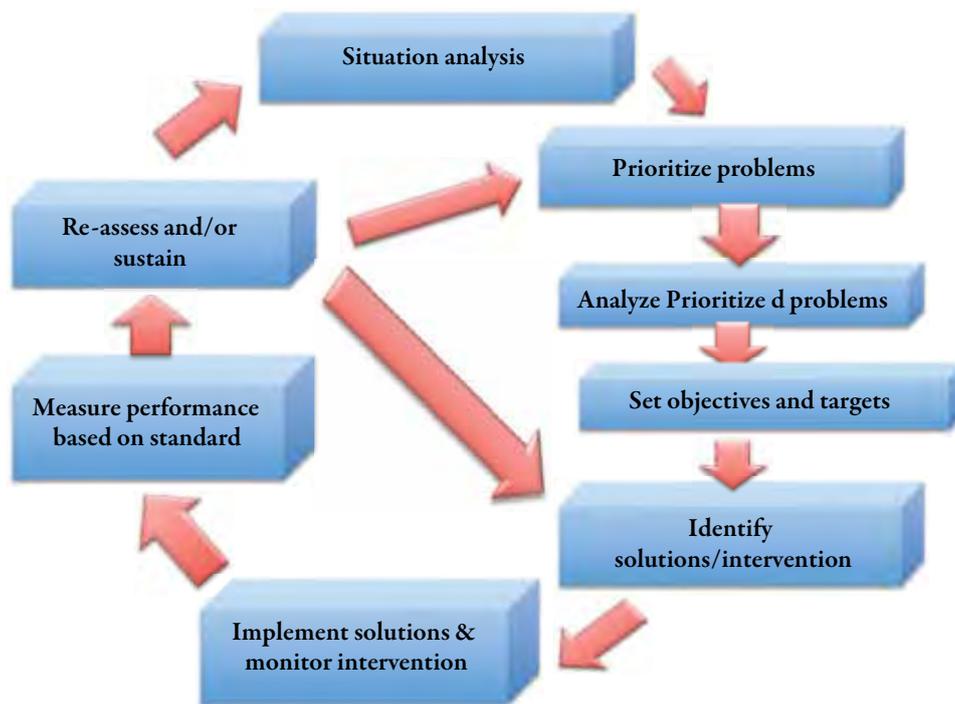
Source: Health Service Quality Improvement Manual for District Hospital, Health Centre and Dispensary

1.1.2 Quality improvement cycle

The quality improvement cycle is a systematic process to collect information on the performance of health systems and services, to assess performance trends, to identify shortfalls between performance and standards, to determine the cause of the shortfalls, to introduce remedial measures to improve quality, and to involve communities and other partners in this process in order to establish ownership and sustainability.

The graphical presentation of the quality improvement cycle is shown in figure 2. Although it appears to be a cycle, in reality it is a spiral because quality improvement is a continuous process.

Figure 2. Quality improvement cycle



Source: *Health Service Quality Improvement Manual for District Hospital, Health Centre and Dispensary*

Step 1: Situational analysis

This step involves assessing the current situation to establish the immediate quality situation of performance in relation to desired performance standards. It portrays performance gap and answers the question, “Where are we now?”

Tools

- o Health Facility Performance and Self Assessment Tool (HFPSAT) for assessing managerial and technical performance
- o Working environment assessment tool

Step 2: Prioritize problems

Following the situational analysis, a number of problems may be identified. These need to be prioritized according to given criteria such as urgency, importance, resource availability, etc.

Tools

- o Problem Prioritization Matrix

Step 3: Analyze prioritized problems

This is a process of identifying root causes of prioritized quality gaps or problems.

Tools

- o But “why” technique

Step 4: Setting objectives and targets

After the major cause(s) have been identified, clear objectives are set using the standards.

Step 5 Identify solutions/interventions

Solutions identified and interventions designed. Expert opinions are used.

Step 6: Implement solutions & monitor interventions

The identified solutions/interventions are implemented. The implementation plan should show what should be implemented, who should implement, when it should start and finish and how it should be done.

Tools

- o Gantt chart and matrix are used as tools to track implementation of the planned activities.
- o 5S-CQI-TQM approach

Step 7: Measure performance based on standards

At this step, the QI should measure progress in performance based on baseline assessment data against standards.

Tools

- o HFPSAT for assessing managerial and technical performance
- o Working environment assessment tool

Step 8: Re-assesses and/or sustain

In this step, results are analyzed against set objectives and performance standards. Where there is success, maintain the performance. Whenever there is partial or no improvement, reanalyze and redesign the interventions.

Tools

- o HFPSAT for assessing managerial and technical performance
- o Working environment assessment tool.
- o SWOC (Strengths, Weaknesses, Opportunities and Challenges) analysis and continuously improve quality of services

1.1.3 Principles of Quality Improvement

Principles of QI are a set of beliefs and values which are fundamental when improving quality of health care. Modern QI approaches, based on five principles, have been shown to improve processes of care, even within weak health systems that face severe material and human resource constraints. These principles are:

- Client focus
- Understand work as Systems and processes
- Teamwork
- Effective communication
- Focus on the use of Data - Data utilization

Client focus

One of the main goals for quality improvement is to meet the expectations of both internal and external clients. External clients are generally the population served, including patients, care takers, families, and communities. Internal clients are health workers who may need a service from a colleague to perform a job function.

Figure 3. Linkage between clients’ needs, expectations and quality of services



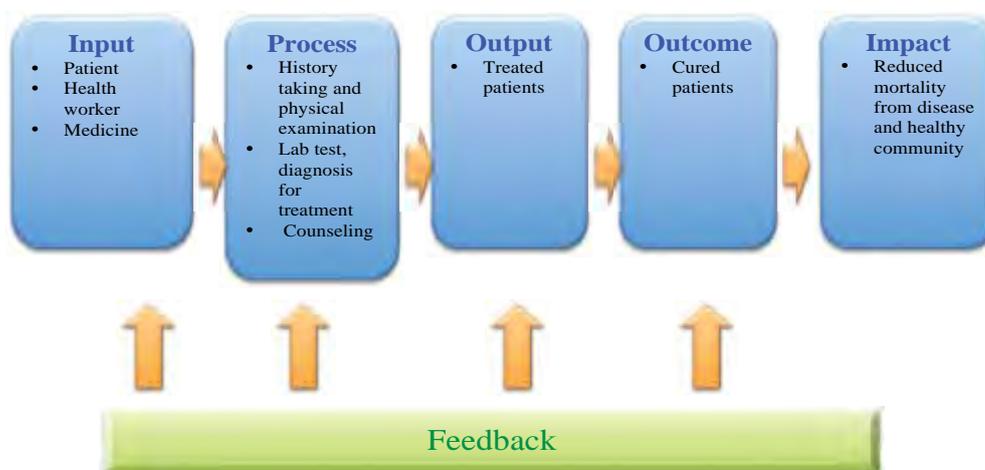
Source: Health Service Quality Improvement Manual for District Hospital, Health Centre and Dispensary

Systems and processes

A system is a set of interacting and interdependent parts and processes working together to accomplish an activity.

A process is a series of steps used to perform a task or accomplish a goal. A system is made up of inputs, processes, and outputs. Health care delivery involves a number of processes occurring simultaneously. Each affects the quality of services offered.

Figure 4: Example of a System Model for Malaria Treatment



Source: Health Service Quality Improvement Manual for District Hospital, Health Centre and Dispensary

Teamwork

A team is a group of professionals working together towards achieving a common goal. Teamwork is a process involving health workers of various disciplines or professionals to accomplish a task. Such a team includes QI-focused members.

Members of QI Team (QIT)

For a quality improvement team to achieve its goals, members must be chosen from different cadres and with different skills.

- Members should be committed staff who want to see things change
- Multilevel representation is crucial; cadre should not be a criteria for selection
- Members should instil confidence in fellow staff members
- Members should be able to motivate and convince their colleagues towards best practices
- Medical Officer in Charge of the hospital, as a matter of rule, must be a member of QIT (decision making is easier)
- Appoint a focal person (from the team) who will coordinate all QI activities in the hospital
- Recommended number of members is between 7 and 10 (depending on size and complexity of the hospital)

The roles of QI Team

- To spearhead, guide and coordinate QI efforts
- To develop and sustain a comprehensive, integrated QI process – every staff member knows who will do what, when and how
- To make IPC related decisions on behalf of facility management
- To discuss and find solutions to ideas and concerns of the staff
- To liaise with management on QI issues

Effective communication

Effective communication is a process of sharing or exchanging information between two or more persons. It involves the transfer of ideas, emotions, knowledge and skills between people. Effective communication is essential for ensuring the quality of health care delivery and the satisfaction of users or clients.

In health care settings, communication would exist between:

- QI team with leaders/management of the hospital, health centre or dispensary
- Health workers
- Health workers with clients
- Management with health workers
- Management with community

Data utilization

Data is needed to determine the baseline performance status, decision-making, planning, monitoring and evaluation. QI efforts should be based on evidence based practice by the use of accurate and timely data.

1.1.4 Dimensions of Quality in Health Care

These are aspects of care pertaining to clients (internal and external), which should be considered during provision of quality services. The table below shows dimensions (components of quality of health care).

Component	Explanation	Examples of standards	Methods to measure quality
Acceptability/ patient centeredness	Delivering health care which takes into account the preferences and aspirations of individual service users and cultures of their communities.	Explanation to patient on his/her treatment or patient education on her/his condition.	Direct observation of the patient – provider encounter based on patient preferences
Technical competence	The tasks carried out by a qualified and skilled health care provider or facility in their usual situation in line with set guidelines and standards	Each child under-five with diarrhoea must have his/her dehydration level properly checked	Direct observation of the patient – provider encounter on assessing child's degree of dehydration
Accessibility	Delivering health care in a timely manner and in a geographically accessible location; provided in a setting where skills & resources are appropriate to need	The laboratory of a district hospital offers services on a 24 hour basis, 7 days of the week	Interview, document review
Interpersonal relations	Trust, respect, confidentiality, courtesy, responsiveness, empathy, effective listening and communication	The health care provider receives and treats the client cordially, with respect and courtesy	Observations, client exit interviews, focus group discussions with clients/patients
Effectiveness	Delivering health care services that adheres to evidence-based practices and results in improved health outcomes for individuals and communities	95% of children treated for pneumonia must be cured within 10 days	Document review
Equity	Delivering health care services which do not vary in quality because of personal characteristics such as gender, race, religion, ethnicity, geographical location or socio-economic status	Standardized management of malaria according to severity only	Direct observation of the patient – provider encounter only
Efficiency	Delivering health care services in a manner which maximizes resource use and avoids waste	Use of algorithms in the treatment of malaria	Cost analysis

Component	Explanation	Examples of standards	Methods to measure quality
Safety	Delivering health care services which minimizes risks and harm to clients and providers	Screen all blood for HIV before transfusion. Screen all pregnant women for syphilis and HIV at first ANC visit	Review of laboratory results on a sample of blood
Continuity of care	Implies delivery of care without interruption throughout the course of care, appropriate referral and communication between skilled health care providers	Established referral system from household to various levels of health care delivery system	Interview of health providers. Review of referral guidelines.
Choice of service	A situation whereby client is allowed to make informed choice	A client seeking family planning services must have the various methods available in Tanzania explained to him/her	Document review for client consent
Amenities	Physical appearance of health facility, cleanliness, comfort, privacy and confidentiality	The hospital rooms/ areas should be clean at all times	Observation of the facility

1.1.5 Stages of improving quality of a health facility

Measures to improve quality will be carried out in two stages. Stage one will focus on improvement of the working environment as an entry point with the intent to improve efficiency by eliminating waste, improving work flow and reducing processes hindering efficiency. Then, Stage two will deal with other areas for quality improvement such as management, clinical, and supportive services, thus achieving **Total Quality Management (TQM)**.

Working Environment Improvement through 5S

The MoHSW has officially adopted 5S-CQI-TQM concepts and using the **5S** approach for **Working Environment Improvement**. 5S is five abbreviations of Japanese terms beginning with the initial 'S.' Convenient translation to English similarly provides five initials of 'S': (i) Sort (ii) Set (iii) Shine (iv) Standardize (v) Sustain. These are explained briefly below.

- (1) **Sort:** Remove unused elements from your venue of work and reduce clutter (removal/ organization)
- (2) **Set:** Organize everything needed in proper order for easy operation (orderliness)
- (3) **Shine:** Maintain high standard of cleanliness (cleanliness)
- (4) **Standardize:** Set up the above three 'S's as norms in every section of your place (standardize)
- (5) **Sustain:** Train and maintain discipline of the personnel engaged (discipline)

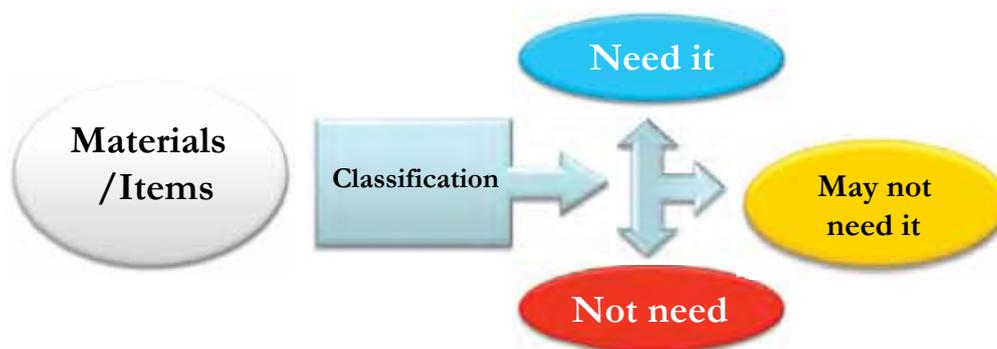
The MoHSW, in collaboration with JICA, is promoting the use of the 5S approach which has been proven to be effective in: reducing unnecessary morbidity and mortality in hospitals, improving client satisfaction and increasing worker motivation.

To make the 5S principles more familiar to workers at health facilities in Tanzania, translation and dissemination into Kiswahili is important. The Kiswahili version of 5S is described in the box below:

Kiswahili translation of 5S
(1) Sasambua (Sort): Ondoa vifaa vyote visivyotumika ofisini kwako.
(2) Seti (Set): Weka katika utaratibu mzuri vifaa vyako ili kurahisisha upatikanaji wakati wa kutoa huduma.
(3) Safisha (Shine): Dumisha usafi wa hali ya juu, pamoja na vifaa vya kazi katika sehemu zote za kutolea huduma.
(4) Sanifisha (Standardize): Kusasambua, kuseti, na kusafisha kwa kiwango kinachokubalika iwe ni utaratibu wa kila sehemu ya kutolea huduma.
(5) Shikilia (Sustain): Fundisha na dumisha tabia njema ya watoa huduma ya utekelezaji wa kusasambua, kuseti, kusafisha na kusanifisha ili iwe endelevu.

S-1 Sort focuses on eliminating items that are not needed for current processes in the hospital. **Sorting** starts with categorizing all equipment, machines and furniture into three (3) categories by using colours: **Unnecessary [Red]**, **May/May Not Be Necessary [Yellow]**, and **Necessary [Blue]**.

Figure 5. Using colours for sorting



Unnecessary items should be discarded if the item is not repairable. If the item is repairable, it should be repaired and stored as it may be needed by other department/sections or other hospitals.

May/May Not Be Necessary items are not used often (once a month) or they are functioning items but are not used in current workflow. These kinds of items should be stored in the sub-store of department/sections so that they can be gotten out quickly when they are needed.

Necessary items should be organized properly according to current workflow. This will be explained in “Setting” activities.

S-2 Set: Practice of **Set** emphasizes proper orderliness of things in the work place. **Signboards** are set at the entrance for easy access to locations of the organization. All locations are named or numbered. Every item has to be labelled with an inventory number (discretely) and assigned a location. The assigned location is marked on the item and at the location. Visual controls including colour-coding are practiced. Files and cupboards are indexed. X-axis-Y-axis alignment is practiced in the positioning of items. Items are placed to facilitate easy access and to optimize workflow.



S-3 Shine implies cleaning with meaning of beautifying and taking care of one's working place and tools. It implies a change of attitude. A worker who fails to practice "shine" should be considered irresponsible. How can such a person provide quality services?



S-4 Standardize consists of generating a maintenance system for the first 3 S's through work instructions, standard operating procedures (SOP'S) and colour coding/sign boards for easy understanding.



S-5 Sustain expects workers to maintain the standards through self discipline, training on following good work habits and the strict observation of workplace rules. Examples include:

- o Periodical staff training
- o Poster display
- o On the job training

A well organized work environment can be achieved from small day-to-day efforts. Overall, 5S will lead to workload reduction and job satisfaction.



Further reading: Implementation guidelines for 5S-CQI-TQM Approaches in Tanzania

Figure 6. 5S-CQI-TQM Frameworks¹



¹ *Kaizen* means CQI in Japanese.

Session Two

Institutionalizing Quality Improvement in a Health Facility

By the end of this session the participants will be able to:

- Define institutionalizing quality improvement
- Outline the four phases of institutionalizing quality improvement
- Describe activities involved in each phase of institutionalizing quality improvement

2.1.1 Definition of institutionalizing quality improvement

This is when QI activities are incorporated into the structure of a health facility, continuously implemented, and supported by a culture of quality improvement as reflected in the facility values, vision, mission, and policies.

2.1.2 Phases of institutionalizing quality improvement

Implementation of QI in a health facility is a process that involves a series of phases:-

1. Awareness
2. Experiential
3. Expansion
4. Consolidation

Awareness

Leadership recognizes the need for QI, because they are dissatisfied with the current situation and are willing to start in a small way to experiment and learn QI.

Experiential

In this phase, health facility staff undertake QI activities and apply various QI approaches to learn from experiences and document successes and challenges.

Expansion

This phase sees an increase in the capacity of the QIT and other staff within the facility, and the health facility begins to strategically expand its QI activities.

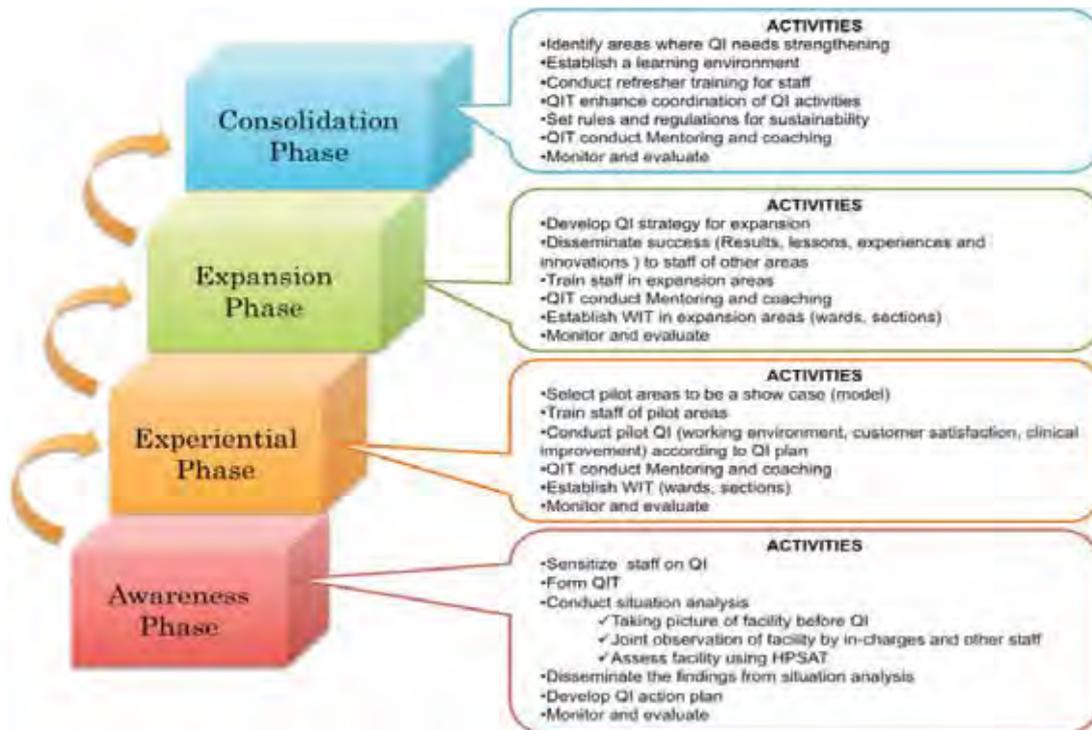
Consolidation

In this phase, there is an attitude change among health workers, leading the health facility management and staff to strengthen and incorporate QI activities into routine operations. The staff and management feel accountable for quality and provide required leadership and stewardship.

2.1.3 Activities to institutionalize quality improvement

The following diagram summarizes activities in each phase.

Figure 7. Activities at different phases of institutionalizing QI



Session Three

Performance Measurements

At the end of this session the participants will be able to:

- Identify areas to be assessed for quality improvement in a health facility
- Describe methods used to assess quality in a health facility
- Describe tools used to assess quality in a health facility

3.1.1 Areas to be Assessed for Quality Improvement in a Health Facility

After institutionalization of QI activities in a facility, the QIT need to measure the facility performance in relation to set standards. The table below shows an example of the broad functional areas where the QIT should measure performance, per level of care i.e., district hospital, health centre and dispensary.

Example of functional areas and aspects to measure by level of care

Functional Area	Aspects to measure by level		
	District hospital	Health Centre	Dispensary
Management	Working environment: <ul style="list-style-type: none"> • Cleanliness • Staff and patient satisfaction • Patient administration • Awareness of performance • Planning • Finance management • Hospital administration • Human resource management • Water, waste, and power management • Maintenance 	Working environment: <ul style="list-style-type: none"> • Cleanliness • Staff and patient satisfaction • Patient administration • Awareness of performance • Planning • Finance management • Health centre administration • Human resource management • Water, waste, and power management • Maintenance • Involvement of community in decision making 	Working environment: <ul style="list-style-type: none"> • Cleanliness • Staff and patient satisfaction • Patient administration • Awareness of performance • Planning • Finance management • Dispensary administration • Human resource management • Water, waste, and power management • Maintenance • Involvement of community in decision making

Functional Area	Aspects to measure by level		
	District hospital	Health Centre	Dispensary
Maternity	<ul style="list-style-type: none"> • Structure • Cleanliness of ward • Ward performance • Ward round • Discharge observation • Admission (file review) • Discharge (file review) • Inpatient care • Monitoring normal delivery (Photograph) • Monitoring complicated delivery (Photograph) • Care of the newborn Apgar <5 • Care of the newborn Apgar >5 • Monitoring post Caesarean section 	<ul style="list-style-type: none"> • Structure • Cleanliness of ward • Ward performance • Ward round • Discharge • Admission (file review) • Discharge (file review) • Inpatient care • Monitoring normal delivery (Photograph) • Care of the newborn Apgar <5 • Care of the newborn Apgar >5 	<ul style="list-style-type: none"> • Structure • Cleanliness of ward • Ward performance • Discharge • Monitoring normal delivery (Photograph) • Care of the newborn Apgar <5 • Care of the newborn Apgar >5
Paediatrics	<ul style="list-style-type: none"> • Structure • Cleanliness of ward • Ward performance • Ward round • Discharge observation • Admission (file review) • Discharge (file review) • Inpatient care 	<ul style="list-style-type: none"> • Not applicable 	<ul style="list-style-type: none"> • Not applicable
Medicine	<ul style="list-style-type: none"> • Structure • Cleanliness of ward • Ward performance • Ward round • Discharge observation • Admission (file review) • Discharge (file review) • Inpatient care 	<ul style="list-style-type: none"> • Not applicable 	<ul style="list-style-type: none"> • Not applicable
Inpatient	<ul style="list-style-type: none"> • Refer above surgery, maternity, paediatrics and medicine 	<ul style="list-style-type: none"> • Structure • Cleanliness of ward • Ward performance • Ward round • Admission • Discharge • Inpatient care 	<ul style="list-style-type: none"> • Not applicable
RCH services	<ul style="list-style-type: none"> • Structure • Performance 	<ul style="list-style-type: none"> • Structure • Performance 	<ul style="list-style-type: none"> • Structure • Performance

3.1.2 Methods of measuring quality in health care*

Three methods of assessing performance will be used. These are: (1) observation of processes or environment, (2) review of documents, and (3) interview.

Observation

- Provider - patient encounter
- Surroundings and infrastructure (including taking photographs)

Review of documents

- Patient file/record
- Photograph
- Patient register
- Ledger

Interview

- Management
- Staff (clinical and non-clinical)
- Patients/clients

3.3.3 Tools used to assess quality in a health facility

A special tool has been developed to assist in assessing performance regarding service provision. It is the **HFPSAT**. This tool is used to measure several aspects of health service provision. It is intended to help a district hospital, health centre and dispensary to make a quick cross-sectional assessment. It is in no way fully comprehensive. It is meant to incorporate suggestions and ideas from the users in order to be able to understand the situation as well as possible and lead to changes over time. The results of this assessment will provide valuable information on the state of the quality of care in a facility. This process involves a number of steps as follows:

Preparations for assessment

Conducting a complete assessment of a district hospital takes a minimum of 2 days using a team of 6 people. The assessment of a health centre and dispensary takes 1 day involving 2 – 3 people. It is not advised to use bigger teams. The assessment team meets a day prior to review the checklist and plan the work ahead of them. This activity takes no more than one hour if well managed.

- A master copy of the assessment tool is printed out
- A precise schedule on what to be done and by who is prepared
- Assessment leader will help the team to rationally divide the work
- Each team will need to read all indicators to be assessed and make sure they have a common understanding of their meaning and how to assess them

How to do it / Explanation for indicator assessment

The tool consists of two parts, the quantitative analysis of indicators and the qualitative part of the interviews.

* Reference: *Hospital Performance and Self Assessment Tool (APAT) Tanga, unpublished*

- This tool is meant to assess performance and not people. Names or titles which indicate a person should be excluded from the assessment. Confidentiality **must** be guaranteed.
- The team should not work against its own people, but with them and for them.
- During the assessment, more observation and listening should be done than speaking.
- For interviews it is useful to have interviewers who are not working in the hospital so as to decrease bias. A room should be provided for confidentiality of the interview and may be a bed provided for interviewed patients need to lie down.
- Assessors should never put pressure on patients or staff to say anything they don't want to say.
- Notes should be put on extra sheet and the interview guide filled in later.
- Motivate the staff under assessment to perform their normal routine. If they perform extra, the results might be better but much more unreliable, which in the end will help less than an honest situation.
- All staff members will be invited for the presentation of the findings the day after the assessment
- The assessors should thank the staff for their help. It is not normal to be assessed and generally no one likes or gets used to it.

Scoring system

Every quantitative assessment needs to value indicators. The scoring system in this tool is as follows:

- **0 score (not performed at all or not available)**
- **1 point (sometimes or irregularly performed or present but not functioning)**
- **2 points (well performed or available and functioning)**

Application of the $\frac{1}{3}$ rule

For many procedures and performances, documents or outcomes the $\frac{1}{3}$ rule can be applied as a cut off point for valuing the indicators.

- If a procedure is less often performed or documented than 33% ($\frac{1}{3}$), it counts as if it was not performed or documented at all. Give **0 score**.
- If a procedure is performed or documented between 33% -67% of the time ($\frac{1}{3}$ to $\frac{2}{3}$), the performance level is considered irregularly performed. Give **1 point**.
- If the procedure is performed more often than 67% ($\frac{2}{3}$), then it counts as if it is always performed. Give **2 points**.

Judge subjectively

If there is nothing to count, judge subjectively. The idea is that you make a judgment based on the knowledge of what should actually be there (according to standard).

When you need to judge subjectively, try to take two independent observers to judge independently and compare results later. Where both observers have different results, discuss, re-assess or ask your team leader for help.

Data entry and analysis

The filled forms should be kept in secure place and the data will be analysed using either computer software or manual analysis.

Presentation

- Work out areas of strength and those in need for improvement.
- Present the results to all staff and facility governing committee.
- Allow open discussion on reasons and factors that have influenced the results and document them. They are valuable information to improve assessment skills next time.

Session Four

Monitoring and Evaluation in Quality Improvement

At the end of this session the participants will be able to:

- Define monitoring and evaluation
- Describe the importance of monitoring and evaluation in quality improvement
- Outline the areas for monitoring and evaluation and methods in quality improvement

4.4.1 Meaning of monitoring and evaluation

Monitoring and evaluation (M&E) are integral components of quality improvement in health services. Health managers, in-charges of hospitals/departments, program managers, and other health workers need to know about M&E, especially in data collection, processing, analysis and use. M&E is performed in order to meet established quality goals, to identify problems (opportunities for improvement), and to ensure that improvements are initiated and maintained.

Effective monitoring has the following characteristics:

- Based on monitoring key indicators
- Collects only relevant data
- Gathers data that are easy to interpret
- Provides timely feedback to health workers

Monitoring

Monitoring is the routine collection and analysis of data for selected indicators. This enables health workers to determine whether key activities are being carried out as planned and are having expected effects on the targeted population. Monitoring also provides regular feedback and oversight of implementation of activities in relation to plans, resources, infrastructure, and use of services by the community served.

Evaluation

Evaluation is a systematic way to analyze and examine how health interventions or programs are being implemented. Evaluation helps to assess the effectiveness, relevance and impact of a health intervention/program towards achievement of the set goals.

4.4.2 Importance of Monitoring and Evaluation

M&E is crucial in QI programs/approaches. M&E:

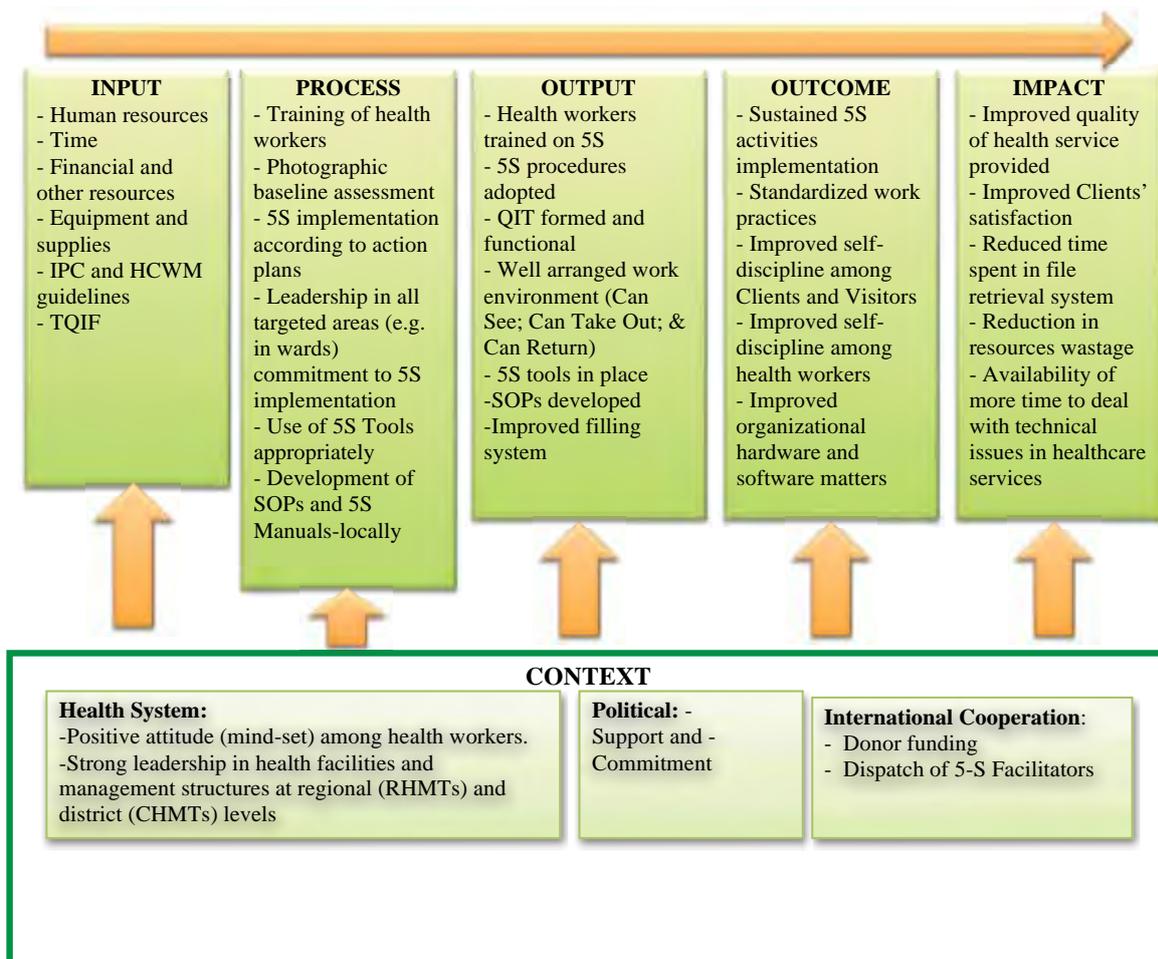
- Assists health managers, directors, in-charges, program managers, staff and others in the health sector perform the day-to-day management of health facilities and programs
- Provides information for strategic planning, design and implementation of health interventions and programs
- Assists in making informed decisions on the prudent use of meagre resources available
- Helps to improve performance by identifying those aspects that are working according to plan, and those aspects which need a mid-course correction
- Tracks changes in services provided and in the desired outcomes

- Assists in improving the human condition in terms of safe working environment and improved health status
- Puts up a system for transparent accountability

1.4.3 Areas for M&E in quality improvement

Areas of monitoring and evaluation include input, process, output, outcome and impact as shown in the figure below.

Figure 8. Examples of indicators for M&E in QI



Module Two

Infection Prevention and Control

Session One

Background and Importance of Infection Prevention and Control practices in Tanzania

By the end of this session, participants will be able to:

- Outline the importance of IPC practices
- Describe IPC challenges in Tanzania
- Describe the rationale for improving adherence to IPC practices
- Describe advances in IPC practices

2.1.1 The Importance of IPC

IPC practices were developed to:

- Protect patients/clients against nosocomial (hospital-acquired or health care related) infections
 - Nosocomial infections are:
 - Costly to deal with
 - Increase length of stay in hospitals
 - Require treatment with expensive broad spectrum antibiotics
 - Increase use of other interventions (laboratory, surgery, etc.)
- Protect health workers from occupational exposures
- Protect communities
- Protect the environment from becoming polluted

2.1.2 Challenges of IPC in Tanzania

In Tanzania many challenges have been seen that hinder quality performance of IPC. They include inadequate:

- Adherence to guidelines and standards at individual and facility level
- Knowledge and skills of IPC among health care workers
- Supply of equipment and material
- Monitoring and supportive supervision
- Renovation and maintenance of infrastructure
- Commitment from management

2.1.3 Rationale for improving adherence to IPC practices

The following are reasons for improving IPC practices in health facilities:

- The risk of infection from blood borne pathogens (HIV, HBV, HCV) is high.

- There is increased awareness of how risky and susceptible to infection it is to work in health care facilities.
- Health care facilities are prone to infection transmission due to:
 - Routine invasive procedures
 - Exposure of health care providers and clients
 - Services provided in a congested environment
- The availability of new scientific information simplifies provision of safe and effective IPC measures.
- There is a need for practical guidelines to reduce risk of nosocomial infections.
- People’s right to health requires a safe health care environment for both providers and clients.

2.1.4 What’s new about IPC?

New developments occur in IPC to meet the needs of health care workers and clients. In the past decade or so some changes that have taken place include:

- The importance of **first decontaminating** all soiled instruments and other items with dilute (0.5%) chlorine solutions before cleaning followed by sterilization or High Level Disinfection (HLD)
- **Multiple uses** of dilute chlorine solutions made from inexpensive commercial products such as,
 - decontamination of instruments and large surfaces,
 - HLD solution and
 - preparing safe drinking water
- Use of “Reuse-prevention” syringes, i.e., retractable syringes

Session Two

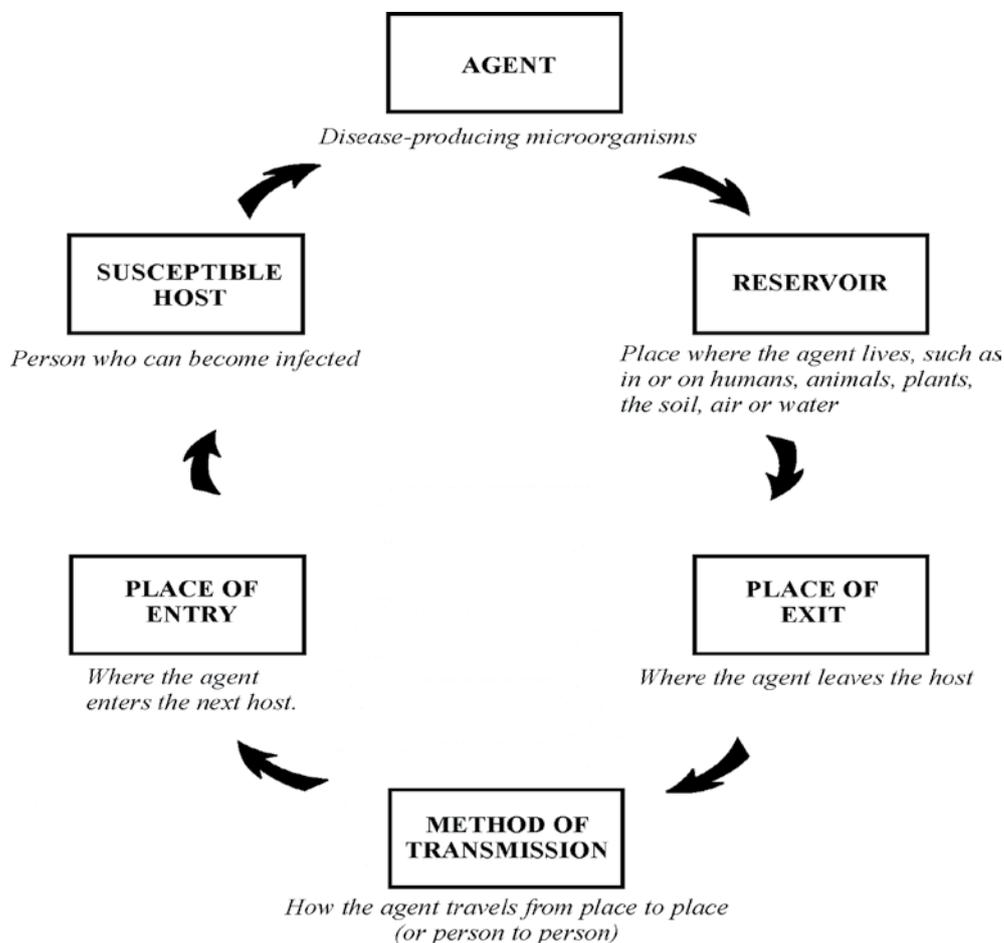
Disease Transmission Cycle and Standard Precautions

By the end of this session, participants will be able to:

- Describe the six components of the disease transmission cycle
- Define Standard Precautions
- Explain actions to implement Standard Precautions
- Explain how Standard Precautions practices break the disease transmission cycle.

2.2.1 The disease transmission cycle

Figure 9. Disease Transmission Cycle.



Source: adapted from APIC 1983; WPRO/WHO, 1990.

In order for diseases to move from person to person the following conditions must exist:

- 1 **Agent** (micro organism that produces disease)
- 2 **Reservoir** (place where agent lives such as in or on humans, animals, plants, the soil, air or water)
- 3 **Place of exit** (where the agent leaves the host)

- 4 **Method of transmission** (how the agent travels from place to place or person to person)
- 5 **Place of entry** (where the agent enters the next host)
- 6 **Susceptible host** (person who can become infected)

The cycle repeats itself; infectious diseases are prevented by breaking the cycle.

2.2.2 Definition of Standard Precautions

Standard Precautions are a simple set of effective practice guidelines (creating a physical, mechanical or chemical barrier) to protect health care workers and patients/clients from infection with a range of pathogens including blood borne pathogens. The practices are used when caring for all patients/clients regardless of diagnosis.

2.2.3 Actions to use in implementing Standard Precautions

There are many actions to use in implementing Standard Precautions. They include:

- Consider every person (patient or staff) as potentially infectious and susceptible to infection
 - Consider dead bodies as also potentially infectious
- Use appropriate hand hygiene techniques including hand washing, hand antiseptics, antiseptic hand rub and surgical hand scrub
- Wear Personal Protective Equipment (PPE) including gloves, masks, goggles, caps, gowns, boots and aprons
- Handle sharps, patient care and resuscitation equipment, and linen appropriately
- Manage patient placement and patient environmental cleaning appropriately
- Process instruments using recommended procedures
- Dispose of infectious waste materials safely to protect those who handle them and to prevent injury or spread to the community

2.2.4 Breaking the disease transmission cycle

Standard precaution practices help create barriers between microorganisms and susceptible hosts.

These practices work by:

- Reducing the number of infection-causing micro-organisms present
- Killing or inactivating infection-causing micro-organisms
- Creating barriers to prevent infectious agents from spreading
- Reducing or eliminating risk practices

Session Three

Transmission-Based Precautions

By the end of this session, participants will be able to:

- Define transmission-based precautions
- Explain precautions based on signs and symptoms presented by a patient/client
- Identify precautions for air, droplet and contact routes of disease transmission using IPC guidelines or pocket guide

2.3.1 Definition of transmission-based precautions

This is a second level of precautions intended for use in patients **known** or **highly suspected** of being infected or colonized with pathogens transmitted by:

- Air (tuberculosis, chicken pox, measles, etc.);
- Droplet (flu, mumps, rubella); or
- Contact (hepatitis A or E and other enteric pathogens [includes fecal/oral transmission], herpes simplex, and skin or eye infections).

Use of transmission-based precautions applies primarily to **hospitalized patients**, allows for empiric use for those without a diagnosis, and includes precautions such as patient placement, transport, PPE, and treatment of patient care equipment.

2.3.2 Implementing transmission-based precautions using signs and symptoms

Airborne	Droplet	Contact
<ul style="list-style-type: none"> • Cough, fever and upper lobe chest findings • Cough, fever and chest findings in HIV-infected persons or persons at high risk for HIV • Rashes (vesicular or pustule) 	<ul style="list-style-type: none"> • Severe, persistent cough when pertussis or flu is present in area • Meningitis • Hemorrhagic rash with fever • Generalized rash of unknown cause 	<ul style="list-style-type: none"> • Acute diarrhoea in an incontinent or diapered patient • Diarrhoea in adult with history of recent antibiotic use • Bronchitis and croup in infants and young children • History of infection with multi drug-resistant organisms (except tuberculosis [TB]) • Vesicular rash • Abscess or draining wound that cannot be covered

1.1.3

2.3.3 Precautions for air, droplet and contact routes

Airborne Precautions

These are interventions designed to reduce the nosocomial transmission of particles 5 µm or less in size that can remain in the air for several hours and be widely dispersed.



Number of Organisms Liberated:	
Talking	0 – 200
Coughing	0 – 3,500
<i>Wells 1934, Duguid 1945, Wells/Riley 1953</i>	

In using airborne precautions staff should remember to:

- Educate patients who have or may have TB about the mechanisms of *M. tuberculosis* transmission and the reasons they should comply with the recommendations.
- Emphasize the importance of patients covering their noses and mouths with disposable tissues (or cloth) when they cough or sneeze to prevent microorganisms from entering air.

Respiratory Hygiene/Cough Etiquette (Droplet Precautions)

The following measures to contain respiratory secretions are recommended for all individuals (staff, patients and visitors) with signs/symptoms of a respiratory infection.

- Cover the nose/mouth when coughing or sneezing;
- Use tissues to contain respiratory secretions and dispose of the tissue in the nearest waste container after use;
- Perform hand hygiene (e.g., hand washing with non-antimicrobial soap and water, alcohol-based hand rub or antiseptic hand wash) after having contact with respiratory secretions and contaminated objects/materials.

Respirator vs. Face Mask

- **Respirator** has only tiny pores which block droplet nuclei and relies on an air tight seal around the entire edge



- **Face mask** has large pores and lacks air tight seal around edges



Health care facilities should provide materials for adhering to respiratory hygiene/cough etiquette in waiting and service provision areas for patients and visitors:

- Provide tissues and no-touch waste containers for tissue disposal
- Locate dispensers of alcohol-based hand rub conveniently
- Where sinks are available, ensure that supplies for hand washing (e.g., soap and disposable towels) are consistently available
- Advise anyone who is coughing (patients and visitors) to use a mask
- Encourage people who are coughing to sit at least one meter (3 feet) away from others
- Post signs at the entrance and inside the outpatient facilities with instructions to practice respiratory hygiene/cough etiquette
- Those with cough should inform a staff member of their symptoms as soon as possible

Contact Precautions

These are interventions that reduce the risk of transmission of organisms from an infected or colonized patient through direct or indirect contact.

- Examples of organisms that can be reduced or killed by contact precautions include enteric pathogens (hepatitis A or echo viruses), herpes simplex and hemorrhagic fever viruses and multi drug (antibiotic)-resistant bacteria.
- Contact precautions should be implemented for patients with wet or draining infections that may be contagious (e.g., draining abscesses, herpes zoster, impetigo, conjunctivitis, scabies, lice, wound infections).
- Contact precautions include standard precautions as well as patient placement, patient transport and care of patient equipment.

Session Four

Hand Hygiene

By the end of this session, participants will be able to:

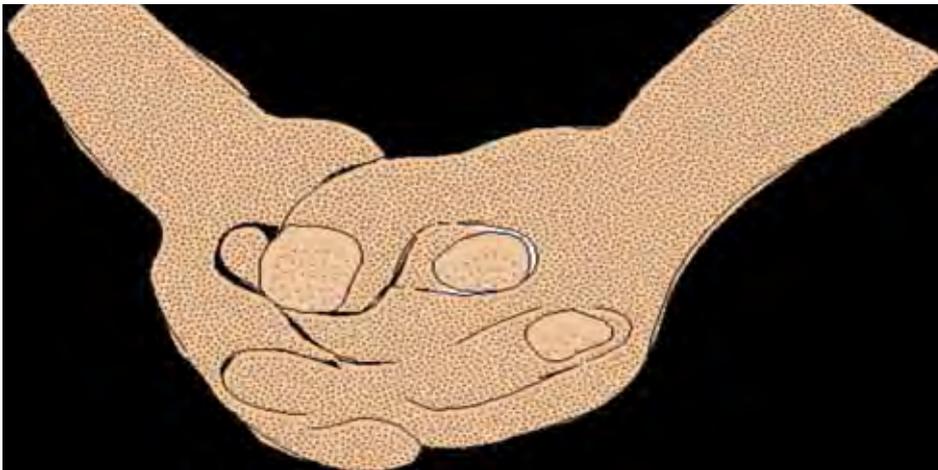
- Define the term hand hygiene
- Describe different types of hand hygiene techniques
- State the times when it is necessary to perform hand hygiene
- Identify strategies for improving hand washing at work site
- Discuss other issues of considerations related to hand hygiene

2.4.1 Definitions

Hand hygiene is an action intended to prevent hand-borne infections by removing dirt and debris and inhibiting or killing microorganisms on skin. It includes care of hands, nails and skin.

It's ALL about the HANDS!

Failure to perform appropriate hand hygiene is a leading cause of nosocomial infections and the spread of multi resistant micro organisms. (Boyce and Pettit 2002)



2.4.2 Types of hand hygiene

There are four types of hand hygiene with different uses for each. They include:

- Routine hand washing
- Hand antisepsis
- Alcohol hand rub and
- Surgical hand scrub

Routine hand washing is a process of mechanically removing soil, organic materials, dirt and transient microorganisms from the hands using plain soap and water. Simple hand wash using soap, water and friction removes 99% of transient bacteria.

2.4.3 When to perform hand washing

There are specific times when hand washing is required for quality IPC practices. Hands must be washed before:

- Examining (direct contact with) a patient/client
- Putting on sterile surgical gloves prior to any invasive or surgical procedure
- Eating

Hands must also be washed after any situation in which they may become contaminated, such as:

- Handling soiled instruments and other items
- Touching mucous membranes, blood or other body fluids (secretions or excretions)
- Using the toilet
- Having prolonged and intense contact with a patient
- Removing gloves

Note: When frequent hand washing is required, a mild soap (without antiseptic agent) should be used to remove soil and debris.

Steps for Routine Hand Washing

1. Thoroughly wet hands.
2. Apply a hand washing agent (liquid soap); an antiseptic agent is not necessary.
3. Vigorously rub all areas of hands and fingers for 10–15 seconds, paying close attention to fingernails and between fingers.
4. Rinse hands thoroughly with clean running water from a tap or bucket.
5. Dry hands with paper towel or a clean, disposable towel or air dry them.
6. Use a paper towel or clean, dry towel when turning off water if there is no elbow or foot control or automatic shut off.

How to wash your hands



Commonly missed areas



Alternative sources of running water

When running water from a tap is not available there are several ways to improvise. Here are some examples:

- A bucket with a tap can be used- water is turned *on* to wet hands, *off* to lather hands and turned *on* again for rinsing.
- A pitcher or tea kettle can provide a running stream of water. A **helper** can pour water from over the hands being washed.
- A “Tippy Tap” can be fashioned from a jerry can and piece of wood to provide a steady stream of water.

2.4.4 How to improve hand washing practices

There are many reasons why people don't wash their hands, including inconvenience of the water source and lack of knowledge about the need for hand washing. There are several ways to improve hand washing practices:

- Provide a conveniently located and adequate water supply along with liquid soap and antiseptics
- Provide health facilities with running water
- Create awareness among all health workers of the importance of improving hand washing practices through:
 - Participatory performance improvement approaches targeted at all health care staff to promote compliance
 - Wide dissemination of current guidelines for hand hygiene practices
 - Involvement of everybody at the health facility
 - Use of successful educational techniques including monitoring and positive feedback

Hand Antisepsis

Removes soil and reduces or slows the growth of both transient and resident flora on the hands. The technique is similar to plain hand washing except that it involves the use of an antiseptic agent instead of liquid soap.

Hand antisepsis should be performed **before**:

- Examining or caring for highly susceptible patients (e.g., premature infants, elderly patients, those with advanced AIDS);

- Performing an invasive procedure such as placement of an intravascular device; and
- Leaving the room of patients on contact precautions (e.g., flu, hepatitis A or E) or who have drug resistance infections (e.g., methicillin-resistant *S. aureus* [MRSA]).

Alcohol Hand Rub

This is a liquid solution which removes transient flora and reduces resident flora, for use in place of hand washing.

- Sometimes known as antiseptic hand rub
- Most contain 60-90% ethyl or isopropyl alcohol, an emollient and often an additional antiseptic, such as chlorhexidine, that has a residual action
- Can only be used when hands are not visibly soiled
- Can remove transient flora, reduce resident microorganisms and protect the skin
- Apply 5 mls of handrub to palm of hand; rub vigorously into hands, especially between fingers and under nails, until dry

Note: If anti microbial activity is desired and hands are not visibly dirty, an antiseptic hand rub should be used rather than washing hands with medicated antiseptic soap.

How to make Alcohol Hand rub

To make your own, low cost hand rub, combine:

- 100 ml of 60-90% ethyl or isopropyl alcohol and
- 2 ml of glycerin

Shake and then it's ready for use

Surgical hand scrub

It is the mechanical removal of soil, debris and transient organisms on hands using liquid soap, running water, antiseptics and friction before surgical procedure.

- Wash hands and arms with a non-medicated soap before entering the operating theatre area.
- Wash hands also each time they are visibly soiled.
- In high risk areas such as the operation room and neonatal ICU, hand scrub protocols that use disposable soft brushes or sponges for a shorter time (at least 2 minutes) should replace harsh scrubbing with hard brushes for 6-10 minutes.

Steps to perform surgical hand scrub:

- Remove rings, watches and bracelets.
- Thoroughly wash hands and forearms to the elbows with liquid soap and water.
- Clean under the nails.
- Rinse with clean, running water thoroughly.
- Apply an antiseptic agent.
- Vigorously scrub all surfaces of hands, fingers and forearms for at least 2 minutes.
- Rinse hands and arms thoroughly with clean water, holding hands higher than the elbows.
- Keep hands up and away from the body, do not touch any surface or article, and dry hands with sterile dry towel or air dry.
- Put sterile surgical gloves on both hands.

Alternate Surgical Hand Scrub

- Remove rings, watches and bracelets.
- Thoroughly wash hands and forearms to the elbows with liquid soap and water.
- Clean under the nails.
- Rinse with clean, running water thoroughly
- Apply 5 mL (about 1 teaspoonful) of alcohol-based hand rub to hands, fingers and forearms and rub until dry; repeat application and rubbing two more times for a total of at least 2 minutes, using a total of about 15 mL (3 teaspoonfuls) of hand rub.
- Put sterile surgical gloves on both hands.
- Keep hands up and away from the body, do not touch any surface or article.

2.4.5 Other issues in hand hygiene

Hand hygiene includes other issues of the hand including:

1. Lesions and skin breaks

- Cuticles, hands and forearms should be free of lesions and skin breaks.
- Cuts and abrasions should be covered with waterproof dressings.
- If covering them in this way is not possible, surgical staff with skin lesions should not operate until the lesions are healed.

Note: For staff that frequently wash their hands (30 times or more per shift) hand lotions and creams should be provided in order to reduce irritation of the skin.

2. Fingernails

- Area around the base of nails contains the highest microbial count on the hand.
- Long nails may serve as a reservoir for gram-negative bacilli, yeast and other pathogens.
- Long nails tend to puncture gloves more easily.
- It is recommended that nails be kept moderately short—not extending more than 3 mm beyond the fingertip.

3. Artificial Nails

- Artificial nails can contribute to nosocomial infections and may serve as a reservoir for pathogenic gram-negative bacilli.
- The use of artificial nails should be prohibited to all health care workers who are in contact with clients/patients, especially surgical team members and those who:
 - Work in areas such as ICU and neonatal units
 - Care for patients who are highly susceptible to infection
 - Care for patients who have infections with resistant organisms

4. Nail Polish

Chipped nail polish supports the growth of larger numbers of organisms on fingernails compared to natural nails. Dark coloured nail polish may prevent dirt and debris under fingernails from being seen and removed.

5. Jewellery

During sterile procedures health care providers should not wear rings or bracelets because it may be more difficult for them to put on surgical gloves without tearing or contaminating them.

Session Five

Personal Protective Equipment (PPE)

By the end of this session, participants will be able to:

- Define Personal Protective Equipment (PPE)
- Identify the various types of PPE and their uses

2.5.1 Definition of PPE

PPEs are barriers that help prevent the spread of microorganisms from person-to-person (patients, clients or health care provider) and equipment, instruments and environmental surfaces to people. PPEs include: caps, eyewear, masks, aprons, gowns, gloves, scrub suits, drapes and boots or closed shoes.



- Health care workers must wear PPEs whenever they are at risk of contact with contaminated materials or blood and body fluids.
- Managers must ensure adequate PPEs are available for the staff.

Note: Remember--caps, masks or drapes made from paper should never be reused.

2.5.2 Types of PPE

Gloves

Gloves are the most important physical barriers for preventing the spread of infection. They:

- are worn when there is a chance of contact with mucous membranes, blood, body fluids, secretions or excretions during patient/client contact
- are worn when handling contaminated wastes or cleaning or disinfecting instruments, equipment and surfaces
- protect hands from infectious materials
- protect patients from microorganisms on staff members' hands

Tips for effective glove use

- Wear gloves that are of correct size.
- Use water soluble hand lotions and moisturizers often to prevent hands from drying and cracking. Avoid oil-based hand lotions or creams because they damage surgical and examination gloves and can contribute to the development of latex allergy.
- Keep fingernails short (less than 3 mm beyond the fingertip). Long nails may provide a breeding ground for bacteria, yeast, and other disease-causing microorganisms. Long fingernails are also more likely to puncture gloves.
- Store gloves in a place where they are protected from extreme temperatures, which can damage gloves.
- Use a separate pair of gloves for each client.
- Remove gloves before moving to another patient or after completion of a specific task.
- Properly dispose used gloves and wash hands with soap and water.

Gloves should not be worn during routine procedures such as bed making, unless items or surfaces are contaminated.

Types of gloves and their use:

Type of gloves	Use
Disposable examination gloves	Medical examinations and procedures such as pelvic gynaecological examinations or drawing blood
Sterile gloves	Surgical or invasive procedures, pelvic obstetric examinations
Clean heavy duty household utility gloves	Cleaning instruments, equipment and contaminated surfaces; housekeeping; laundry; mortuary tasks; and handling or disposing of contaminated waste

- Even the best quality, new latex rubber surgical gloves may leak up to 4% of the time (Davis 2001a). Latex gloves—especially when exposed to fat in wounds—gradually become weaker and lose their integrity.

Double Gloving

Decreases the risk of blood-hand contact

Note: Double gloving does not prevent blood exposure if needle sticks or other injuries occur.

When to double glove:

- If the procedure involves coming in contact with large amounts of blood or other body fluids (e.g., vaginal deliveries and caesarean sections).
- For short surgical procedures (30 minutes or less) that involve minimal exposure to blood or mucous secretions (e.g., laparoscopy or minilaparotomy), double gloving is not necessary.
- Consider whether to double glove or not depending on the situation.
- Use gauntlet gloves or modified surgical gloves if protection of forearms is needed.

DOs and DON'Ts about Gloves

DOs	DON'Ts
<ul style="list-style-type: none"> • Select the appropriate glove • Wear the correct size glove • Change surgical gloves periodically during long cases • Keep fingernails trimmed moderately short • Pull gloves up over cuffs of gown • Use water-soluble (non fat-containing) hand lotions and moisturizers to prevent hands from drying, cracking and chapping 	<ul style="list-style-type: none"> • Use oil-based hand lotions or creams • Use hand lotions and moisturizers that are very fragrant (perfumed) • Store gloves in areas where there are extremes in temperature

Eyewear

Eyewear protect staff from splashes of blood and other body fluids by covering the eyes. They include clear plastic goggles, safety glasses, face shields and visors. Glasses with plain lenses are also acceptable if they have side shields attached.

- Masks and eyewear should be worn whenever there is a risk of splashes into the face e.g., when performing caesarean section or vaginal delivery or when cleaning instruments) and when patients are on droplet precautions.

Masks

- Are worn to protect others by containing moisture droplets expelled by health care providers through nose and mouth during procedures.
- Protect health care workers by preventing splashes from entering their noses or mouths.
- Qualities of masks:
 - Should be large enough to cover the nose, lower face, jaw and all facial hair (to contain it).
 - The most effective masks are fluid-resistant

Respirators

Particulate respirators are specialized types of masks, such as N-95, which are recommended for situations in which filtering inhaled air is considered important (e.g., for the care of a person on airborne precautions).

Scrub Suits

A scrub suit consists of drawstring pants and a shirt worn during procedures to protect health care workers from splashes. They are worn over or instead of street clothes. The V-neck shirt must fit well enough so that it doesn't slide off the wearer's shoulders or expose the chest. The main use of cover gowns is to protect the health care providers clothing.

Surgical gowns

These are outer sterile garments worn during surgery by scrubbed staff. Sleeves should be long and cuffed; the gown should be tied in the back and should be long enough to reach boots.

- Surgical gowns made of fluid-resistant materials help keep blood and other body fluids off the skin of personnel, particularly in operating, delivery and emergency rooms.
- Cloth gowns should be heavy enough to provide an effective barrier.
- Jeans material (denim) or canvas is too dense to autoclave, is difficult to wash and takes too long to dry.
- The health care provider should wear a plastic or rubber apron underneath the gown to prevent contact of the skin with blood and body fluids.
- If a large spill occurs, the best thing to do is shower or bathe as soon as possible after completing the procedure.

Aprons

Aprons are macintoshes or plastic coverings used to protect clothing or skin from contamination.

- Aprons made of rubber or plastic provide a waterproof barrier along the front of the health care provider body, and

- Should also be worn during procedures where the likelihood of splashes or spillage of blood, body fluids, secretions or excretions is likely (e.g., when conducting deliveries).

Footwear

Footwear is protective, rigid or semi-rigid coverings for the feet.

- It is worn to protect feet from injury by sharp or heavy items or fluids that may accidentally fall or trip on them.
- Rubber boots or closed shoes or leather shoes are acceptable and must be kept clean and free of contamination from blood or other body fluid spills.
- Sandals, “thongs” or shoes made of soft materials (cloth) are not acceptable.

Drapes

Drapes are cloths placed around a prepared surgical incision and used to create a work area.

- Although this area is often called the “sterile field,” it is **NOT** sterile because cloth drapes allow moisture to soak through and can help to spread infection from skin.
- Neither sterile gloved hands nor sterile or high-level disinfected instruments and other items should touch drapes once they are in place because cloth drapes allow moisture to soak through and can help to spread organisms into the incision.

Note: Using towel drapes to create a work area around the incision limits the amount of skin that needs to be cleaned and reminds the surgical team not to touch the patient.

Session Six

Safe handling of sharps during procedures

By the end of this session, participants will be able to:

- Define sharps and safe injections
- Explain the principles of injection safety
- Describe data on injection safety practices in Tanzania
- Describe practices for safe injection
- Describe the hands-free technique
- Outline the WHO strategy for safe injections
- Describe a case study on safe handling of sharps



2.6.1 Definitions

Sharps are any instrument capable of puncturing the skin, such as scissors, needles, scalpels or blades, etc. In health care settings, injuries can occur easily from sharp instruments, especially during surgical procedures.

A safe injection is one that serves the intended purpose and:

- Does not harm the client,
- Does not expose the provider to any avoidable risk, and
- Does not result in any waste material that is dangerous to the community.

2.6.2 Principles of injection safety

- Injections should be administered by qualified personnel (e.g. a nurse)
- Hands should be washed before and after administering an injection
- Sharps should be disposed of immediately after use
- Needles should not be recapped
- Safety boxes should be used properly

Nine “rights” of safe injection:

The **right** drug is given with the **right** formulation to the **right** patient in the **right** dose using the **right** needle and syringe at the **right** site by the **right** route at the **right** time and using the **right** method of disposal.

2.6.3 Situation analysis of injection safety practices in Tanzania

Data from a study in 5 referral hospitals of Tanzania (*JSI-MMIS, September 2004*)

Indicator	Percent
Proportion of injection practices:	
<ul style="list-style-type: none"> • Performed mainly by nurses • Handled without washing hands 	95.0 50.0
Disposal of sharps:	
<ul style="list-style-type: none"> • Immediately after use • Recapped needles • Did not use safety boxes 	54.2 45.8 50.0

Types of injections given in the health facilities:

- 71.9% were curative
- 14.5% diagnostic
- 1.0% family planning
- 12.6% vaccination

Only about 71.9% of injections are prepared on dedicated tables for safe injection handling. The preparation of injections must be done on a clean dedicated table.

Factors leading to injections overuse:

1. Prescriber-associated factors:
 - Some think injections work better
 - Some think that patients like injections
2. Patient-associated factors:
 - Some think injections work better
 - Some request injections
3. System issues:
 - Lack of effective oral medications
 - Financial gain

2.6.4 Safe Injection Practices

Preparation of the skin prior to injection:

- Wash skin that is visibly soiled or dirty with soap and water
- Avoid giving injections if skin integrity is compromised (not intact)
- For IV injection clean the site using an antiseptic and wait until it dries

Injection sites:

- Inject at the right site for age, dosage and type of injection

Injection devices:

- Use sterile needle and syringe for each injection and to reconstitute each unit of medication

- A needle and/or syringe whose package has been punctured, torn or damaged must be discarded
- A needle that has touched any non-sterile surface must be discarded
- Safely dispose of used needles and syringes immediately

“Reuse-prevention” injection devices:

- To prevent reuse of needles and syringes, the following syringes are recommended: e.g., auto-disable syringe, retractable syringe

To prevent contamination of equipment and medication:

- Prepare each injection in a clean area where blood or body fluid contamination is unlikely
- Use single-dose vials rather than multi-dose vials
- Always pierce the septum of vials with a sterile needle

Note: Avoid leaving a needle in medicine vial stoppers.

To prevent access to used syringes and needles and prevent injuries:

- Discard used syringes and needles at the point of use into a puncture proof sharps container
- Seal sharps containers when $\frac{3}{4}$ full for transport to a secure area
- After sealing, do not open, empty, reuse or sell discarded syringes or needles
- Dispose of sharps waste in an efficient, safe and environmentally-friendly way

Note: If it is necessary to recap a needle, for example after drawing blood using Vacutainer® or blood gas, use a one-handed recap method:

1. First, place the cap on a hard, flat surface and remove hand from the cap.
2. Next, hold the syringe with one hand and use the needle to “scoop up” the cap.
3. Finally, when the cap covers needle completely, use the other hand to secure the cap on the needle.

2.6.5 “Hands-free” technique

The “hands-free” technique for passing sharp surgical instruments should always be used. It is a safer method of passing sharp instruments during surgical procedures.

Instructions for safe zone in surgery:

- Always use hands-free techniques when passing sharp surgical instruments
- Use a sterile kidney basin or other suitable container (safe or neutral zone)
- Place the container on the sterile field between the surgeon or clinician and assistant
- The assistant puts individual instruments in the container as they are needed.
- The surgeon/clinician takes them from the container, and returns them to the container after using them

2.6.6 Strategies for achieving Safe Injection

WHO and Safe Injection Global Network (SIGN) recommend the following strategies:

- Changing behaviour of health care workers and patients

- Ensuring availability of equipment and supplies
- Managing sharps waste safely and appropriately

2.6.7 Case Study I: Peter's accident

- **Objective:** To identify the risk conditions for a patient/client and health care workers during practice.
- **Procedure:** Select three persons to act as a doctor/physician, a patient/client, and nurse.
- **Role Play:** Mr. Peter sustained multiple injuries from a motor vehicle accident. He was rushed to the nearby health care facility. On arrival, he was seen by a physician who examined him and prescribed the following:

“Injection of tetanus toxoid 0.5 ml. Inter Muscular (IM) antiseptic dressing daily for three days, and anti-pain medication daily for three days.”

Mr. Peter went to an injection room for the tetanus toxoid and was attended by a nurse who administered the prescribed injection. While getting the injection, Mr. Peter observed that the vial of tetanus toxoid was taken from the fridge and was open, then taped. He also observed that the syringe and needle used were not taken from a sealed package and that all injections were administered using the same injection device.

After the injection he went to a wound dressing room where he was received by a nurse and requested to sit on a bench. The nurse dressed the wounds. While the nurse was dressing the wounds, the patient observed that the nurse neither washed her hands nor did she put on gloves. Moreover, the nurse did not open a new pack for the dressing.
- **Questions for discussion:**
 - 1 Who is at risk for infection?
 - 2 What types of risks does this case study present?
 - 3 What should have been done to prevent the risks?

Session Seven

Post-Exposure Prophylaxis (PEP)

By the end of this session, participants will be able to:

- Define post-exposure prophylaxis (PEP)
- Explain the six steps of PEP
- Explain levels of risks of transmission of blood borne pathogens (BBP) for an exposed person
- Provide guidelines for PEP
- Describe management of exposure to Hepatitis B Virus (HBV)
- Describe management of exposure to Hepatitis C Virus (HCV)
- Describe follow up of exposure to HIV
- Use a case study on PEP

2.7.1 Definition of PEP

If a health care worker is exposed to blood or other body fluids, either by a needle stick/sharps injury or a splash to a mucous membrane or non-intact skin, the person should be offered PEP. PEP is the management of this exposure. It is the provision of preventive services following an exposure to potentially infected blood or other body fluids in order to minimize the risk of acquiring blood borne pathogens.

2.7.2 The six steps in managing occupational exposure to BBP

Step 1: Exposure Site Management

- Wash the site with soap and running water
- Flush mucus membrane with saline/water
- There is no evidence of benefit for application of antiseptics or squeezing (milking) puncture sites
- Avoid use of bleach (disinfectants) and other caustic agents to the site
- Start PEP (starter pack) as soon as possible, within 2 hours after exposure. This should not wait for testing of the source or exposed health care worker.

Step 2: Exposure Report

The following information is to be recorded in the confidential medical report

- Date and time of exposure
- Details of the procedure performed and the use of protective equipment at the time of exposure
- The type, severity and amount of fluid to which the health care worker was exposed
- Details of the exposure source person
- Medical documentation that provides details about post exposure management

Step 3: Evaluation of Exposed Health Care Worker

- Evaluate as soon as possible, preferably within 72 hours of exposure
- Counsel and test for HIV, HBV and HCV
- In case of refusal to test, PEP should not be continued

Step 4: Evaluation of the Source Person

- Performed when the exposed health care worker agrees to take PEP
- If HIV, HBV and HCV status of a source person is unknown, perform these tests after obtaining consent
- If the source person is not known, evaluate the exposure as high risk for infection
- Do not test discarded needles or syringes for viral contamination
- The exposed health care worker should not be involved in obtaining consent from the source person

Step 5: Risk Assessment and Drugs for PEP

Body fluids known to be infectious	Body fluids presumed to be infectious	Body fluids NOT known to be infectious (if not visibly bloody)
<ul style="list-style-type: none"> • Blood • Any fluid with blood • Semen • Vaginal secretions • Breast milk 	<ul style="list-style-type: none"> • Cerebral spinal fluid • Pleural fluid • Pericardial fluid • Peritoneal fluid • Amniotic fluid • Synovial fluid 	<ul style="list-style-type: none"> • Tears • Saliva • Urine • Feces • Sweat • Emesis

Note: Consider any body fluid as infectious unless proven otherwise. The classification above is only for deciding on potential risk of exposure and the need for PEP.

Step 6: Follow up of exposed person

Emotional effects need to be observed and health care workers must receive counselling services after exposure to blood and other body fluids. Areas to address during post-exposure counselling include the following:

- The risk of infection
- The reporting of any fever, aches, rashes, swollen glands, fatigue and general malaise
- The importance of adhering to safer sex practices during the monitoring period
- Minimizing secondary spread through behavioural change (e.g., abstinence or condom use)
- Not donating blood, semen or organs
- Not breastfeeding for a period of at least six months
- The importance of completing prescribed regime
- Information about potential drug interactions and side effects (including how to report and manage side effects)
- The need for an HIV antibody test up to, at least 6 months post-exposure (i.e., at 6 weeks, 12 weeks and 6 months)
- Getting re-evaluated within 2 hours to know serostatus

2.7.3 Levels of Risk of Transmission of BBP

- Levels of risk vary with the type and severity of exposure.
- Percutaneous exposure occurs mainly as a result of injury from needles, sharp instruments, bone fragments or significant bites which break the skin.

High Risk Situations in Percutaneous Exposures:

- Large volume of blood or potentially infectious fluids
- Blood or fluid containing blood from HIV symptomatic patient
- Injury with hollow needle
- Deep or extensive injuries
- Confirmed drug (antiretroviral) resistance in source patient
- Visible blood in/on device
- Injury with a needle from patient’s artery or vein

Low Risk Exposure Circumstances with Percutaneous Injuries:

- Injury with low calibre needle
- No visible blood contamination
- Injury with solid (suture) needle or lancet
- Small volume of blood
- Superficial injury or mucocutaneous exposure

Risk in contact with mucous membranes and non-intact skin exposure (examples include wounds, abrasions and dermatitis):

- **High risk exposure** is when there is contact with large volume of blood or body fluid splashes
- **Low risk exposure** is when there is contact with small volume (drops) of blood or body fluids

Table of Risks of Transmission after an Exposure to BBP

Infective Agent	Mode of Exposure	Risk of Infection/ Exposure in %
HIV	Percutaneous	0.3
HIV	Mucous membrane	0.03-0.09
HBV	Percutaneous	10-30
HCV	Percutaneous	0-10

2.7.4 Guidelines for PEP

Initiation of starter pack should not await the evaluation of the source person. PEP should be initiated within 2 hours and not later than 72 hours. PEP should be stopped when source is negative or exposed person is positive. PEP should be continued up to 28 days when there is a low or high risk and the exposed person is negative.

Assessment and Management of the Exposed Person

S/N	Source person	Exposed health care worker	Management
1	HIV Positive	HIV negative	PEP for 28 days; Monitoring for 6 months
2	HIV Positive	HIV Positive	Stop PEP; Refer to CTC
3	Refuses test assume positive	HIV negative	PEP for 28 days; Monitoring for 6 months
4	HIV negative	HIV negative	No PEP

Source: CDC Guidelines (2001)

Regimens According to Level of Risk

Risk category	ARV regimen	Drug regimen
Low risk	Dual therapy (two drugs)	Zidovudine (ZDV) + Lamivudine (3TC)
High risk	Triple therapy (three drugs)	ZDV + 3TC + Efavirenz (EFV) or ZDV + 3TC + Kaletra

2.7.5 Management of Occupational Exposure to HBV

Pre-exposure vaccination (immunization) for Hepatitis B Virus must be routinely provided where contact with potentially infectious blood or other body fluids is anticipated. The risk of acquiring HBV is far greater than that of HIV or HCV.

Recommended Standard Course for Immunization against HBV

- First initial dose - stat
- Second dose – one month later
- Third dose – 6 months after the first dose

Note: There is no danger in vaccinating someone who is already infected with HBV

- Pre-vaccination serologic screening for previous infection with HBV virus is not necessary; it is not cost-effective
- Antibodies to HBV must be measured 2-6 months after the last dose

Post-Exposure Management of HBV

In case of occupational exposure to HBV, prophylaxis is indicated for those health care workers who are susceptible (defined as having a negative HbsAg or negative HBV surface antigen and no history of receiving immune serum globulin).

Steps for Managing an Exposure to HBV include:

- Assessment of the risk of exposure to HBV
- Determination of HBV status of the source and the exposed patient
- Collection of specimen from the source person for HBsAg, to determine if there is active HBV virus

- If testing is not possible, base the determination on clinical history (jaundice, hepatitis of any viral strain, and previous immunization status)
- Administering hyper immune serum globulin (HBIg) (5 ml by intramuscular injection) as soon as possible but within 7 days of exposure
- Administering first dose of HBV vaccine, which must be repeated according to the standard course.
- If the first dose of HBV vaccine is not available, repeat HBIg one month from the first dose. Efficacy is increased by combining with HBV vaccine

Post-Exposure Immunization

HBV vaccines do not provide any protection from infection if given after an exposure. However, HBIg given soon or within 7 days after exposure to non-immune individuals to HBV offers protection.

Note: It is recommended that all health care workers, especially those working in high risk areas, should be vaccinated against HBV.

2.7.6 Management of Occupational Exposure to HCV

There is no post exposure vaccine or drug prophylaxis available for HCV

- Following exposure to blood or other body fluids the source person should be tested for HCV.
- If the results are positive, the exposed person must also be tested for anti-HCV and alanine aminotransferase (ALT) at baseline and at four to six months.

2.7.7 Laboratory Follow-up of a Person Exposed to HIV

If PEP is administered, the exposed person must be monitored for drug toxicity by testing at baseline and 2 weeks after starting PEP. Testing includes:

- Full blood picture (FBP)
- Renal (RFT)
- Liver function tests (LFTs)

2.7.8 Case Study II: Gloria the diligent laundry worker

Gloria is a young woman working in the X hospital laundry for the past year. She is married with 2 children both still in primary school. Her husband works as a gardener at the Sheraton Hotel and Towers. They just moved to the city from the village because of the oil spillage so that they could find jobs and fend for their children.

She is a very diligent worker, always punctual and willing to do extra work whenever the need arises. On this fateful day at 2 minutes after 5:00pm, when she is about to change to go home, a laundry bag from the medical ward was brought in for laundry. The supervisor asked her to please help her sort the laundry before putting it in the washing machine as the wards were running out of clean linen.

Unfortunately, a nurse had left a syringe and needle used for injecting a terminally ill AIDS patient among the sheets to be sorted. Whilst sorting the linen, Gloria was pricked by this needle.

She continued and finished sorting the linen then took the syringe and needle to her supervisor. The supervisor advised her to wash her fingers and gave her a note to go and see a doctor immediately.

Gloria went to the Out-patient Department and saw that the queue for the doctor was too long and she was in a hurry to go and cook for her family. So, she just ignored the injury and rushed home.

Ten years later during a programme for Voluntary Counseling and Testing (VCT), Gloria decided to go for testing and she tested positive.

Questions:

What did Gloria do right?

What was done wrong?

A plenary session follows, discussing the epidemiology of needlestick injuries at the institution, and the prevention and management of needlestick injuries.

Group Exercise 1

Situation: It has been reported in several settings that health care workers do not report accidents, because they know that they need to do an HIV test before receiving PEP, and they fear because of lack of confidentiality.

Questions:

- 1: What do you think about this?
- 2: How do you handle this in your setting?

Group Exercise 2

As a health care worker, revisit your functions/roles and discuss how you would prevent occupational exposure to HIV/AIDS at your work place.

Session Eight

Preparation of Surgical Site Prior to Surgery

By the end of this session, participants should be able to:

- Define the terms antiseptics and antisepsis
- Identify criteria for selection of antiseptics
- Explain the procedure for storing and dispensing of antiseptics
- Describe the procedure for skin preparation
- Describe the procedure for cervical or vaginal preparations for minor procedures

2.8.1 Definitions

Antiseptics: Antiseptics (or antimicrobial agents) are chemicals that are applied to the skin or other living tissue to inhibit or kill microorganisms thereby reducing microbial count.

Antisepsis: This is the process of applying an antiseptic agent to reduce the number of microorganisms on skin, mucous membranes or other body tissue.

2.8.2 Criteria for Selecting an Antiseptic

Antiseptics should:

- Be safe and microbial activity should be known
- Have instructions on how to use
- Be cost effective
- Be user friendly with a residual effect
- Be accepted by the government/authority
- Not be hazardous to the community and environment on disposal

2.8.3 Dispensing and Storage of Antiseptics

Antiseptics can be easily contaminated. To prevent contamination of these solutions:

- Use antiseptics in small quantities at a time
- Pour a small quantity at a time into a smaller container for daily use if antiseptics are stored in large containers
- Clean and thoroughly dry antiseptic containers before refilling
- Do not “top off” antiseptic in dispensers
- Never soak or store gauze or cotton wool in any antiseptic
- Prepare fresh solutions regularly (at least weekly)
- Store antiseptic solutions in a cool, dark area

2.8.4 Procedure for Skin Preparation

Antiseptic solutions minimize the number of microorganisms around the surgical site. Some antiseptic solutions have a residual effect meaning that their killing action continues for a period of time.

Instructions for Skin Preparation

Ask the patient about allergic reactions (e.g., to iodine preparations) before selecting an

antiseptic solution.

- Gently wash the operative site with soap and clean water if the skin or external genital area is visibly soiled and dry the area before applying the antiseptic.
- **Do not shave hair around the operative site.** Shaving increases the risk of infection because the tiny nicks in the skin provide an ideal setting for microorganisms to grow and multiply.
- If hair must be cut, trim the hair close to the skin surface with scissors immediately before surgery.
- Use dry, sterile forceps and new cotton or gauze squares soaked in antiseptic to thoroughly cleanse the skin.
- Work from the operative site outward for several centimetres. (A circular motion from the centre out helps to prevent recontamination of the operative site with local skin bacteria.)
- Do not allow the antiseptic to pool underneath the client's body; this can irritate or burn the skin.
- Allow the antiseptic enough time to be effective; when the skin is visibly dry.

2.8.5 Cervical or Vaginal Preparation for Minor Procedures

For cervical and vaginal antiseptics prior to inserting a uterine elevator for minilaparotomy, IUCD insertion, or doing an endometrial biopsy:

- Select an aqueous (water-based) antiseptic such as an iodophor (povidone-iodine) or 2–4% chlorhexidine gluconate (e.g., Hibiclens) or Savlon if properly prepared.
- Do not use alcohols or alcohol-containing preparations, such as Dettol. Alcohols burn and they also dry and irritate mucous membranes that in turn promote the growth of microorganisms.
- Remember, hexachlorophene (pHisoHex®) is neurotoxic and should not be used on mucous membranes, such as the vaginal mucosa, because it is readily absorbed.

When preparing the cervix or vagina for minor procedures:

- Ask the patient about allergic reactions (e.g., to iodine preparations) before selecting an antiseptic solution.
- If the external genital area is visibly soiled, gently wash it with soap and clean water and dry the area before applying the antiseptic.
- After inserting the speculum, apply antiseptic solution liberally to the cervix and vagina (two times). It is not necessary to swab the external genital area with antiseptic solution if it appears clean.
- If an iodophor is used, allow time (2 minutes) before proceeding.



Session Nine

Preventing Infections Related to Use of Intravascular Devices

By the end of this session, participants will be able to:

- Define intravascular devices
- Explain how pathogens may enter the blood stream
- Explain techniques for reducing the risk of nosocomial infections associated with the use of intravascular devices
- Identify safe measures for changing fluids and infusion sets

2.9.1 Definition of intravascular devices

Intravascular devices are sharps used to deliver sterile fluids, medications and nutritional products to the body through blood vessels.

- They include butterflies, needles, cannulae and central venous catheters.
- They can also monitor blood pressure and other hemodynamic functions.
- They present a risk for local and systemic bloodstream infections.

2.9.2 How pathogens may enter the blood stream

Pathogens may enter the blood stream by many routes. These include:

- By travelling along the device at the insertion site (pathogens on the skin)
- Through contamination of the hub (connection site of the device used)
- Through contaminated infusion fluid
- Through the bloodstream from another site of infection

2.9.3 Preventing infections related to use of intravascular devices

Reduce the risk of contracting infections associated with the use of intravascular devices by using IPC practices including:

- Hand hygiene and use of gloves
- Peripheral catheters (venous and arterial)
- Site selection and change
- Central venous catheters site care and dressings

2.9.4 Safe procedures for changing fluids and infusion sets

Fluids and infusion sets must be changed on a regular basis.

For fluids:

- Change infusion bottles or plastic bags with parenteral solutions every 24 hours.
- Change infusion bottles or plastic bags with lipid emulsion given alone within 12 hours.

For infusion sets:

- Change infusion sets whenever they are damaged and at **72 hours**, routinely. (If the tubing becomes disconnected, wipe the hub of the needle or catheter with 60–90% alcohol and connect it to a new infusion set.)
- Replace tubing used to administer blood, blood products or lipid emulsions within **24 hours**.

Session Ten

Preventing Infections of the Urinary Tract

By the end of this session, participants will be able to:

- Define urinary catheterization
- Explain tips for preventing infections in catheterized patients

2.10.1 Definition

Urinary tract catheterization is the aseptic insertion of a urinary catheter into the urinary bladder to empty it.

2.10.2 Tips for preventing infections in urinary catheterized patients

- Insert the catheter aseptically
- Caution the patient against pulling on the catheter
- Ensure that the catheter collection system remains closed and is not blocked
- Avoid raising the collection bag above the level of the bladder
- If the bag must be raised above the level of the patient's bladder during transfer of the patient, clamp the tubing
- Drain all urine from the tubing into the bag before the patient stands up
- Empty the urine drainage bag aseptically
- Do not touch the ends of the catheter or tubing if the drainage tubing becomes disconnected. Wipe the ends of the catheter and tubing with an antiseptic solution before reconnecting them
- Do not allow the urine bag to touch or rest on the floor
- Wash the urethral opening and head of the penis (men) and perineal area (women) after a bowel movement
- Change the catheter if frequent irrigation is required
- Remove the catheter as soon as possible

Session Eleven

Processing Instrument and other Re-usable Items

By the end of this session, participants will be able to:

- Define the terms used in processing instruments
- Explain key steps in processing instruments
- Demonstrate ability to prepare dilute chlorine solution from the concentrated liquid or powder form
- Explain differences in sterile and HLD instruments
- Explain storage of sterile and HLD instruments
- Explain shelf life



2.11.1 Definitions

Decontamination: A process that makes inanimate objects safer to handle by staff before cleaning. This is done by soaking the objects in 0.5% chlorine solution for 10 minutes, which inactivates HBV, HCV and HIV and reduces the number of other microorganisms but does not eliminate them.

Cleaning: A process that physically removes all visible dust, soil, blood or other body fluids from inanimate objects as well as removes sufficient numbers of microorganisms to reduce risks for those who touch the skin or handle the object.

Disinfectant: A chemical that destroys or inactivates microorganisms on inanimate objects and surfaces.

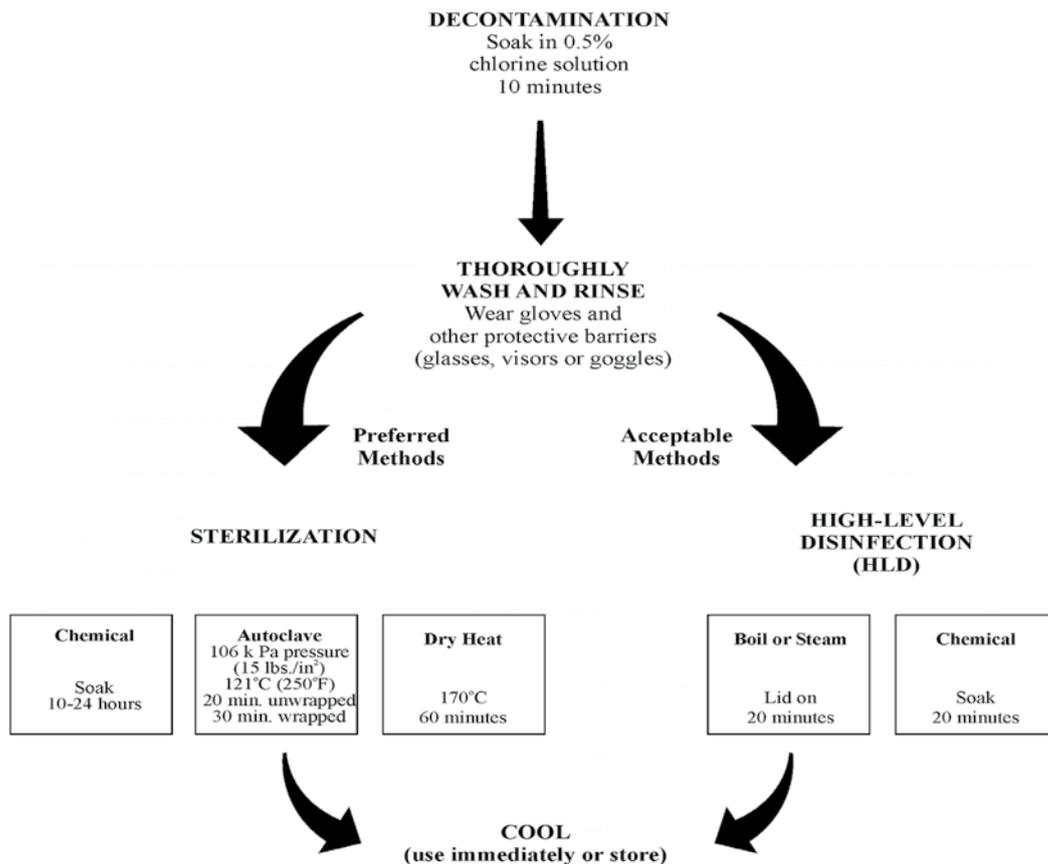
High Level Disinfection (HLD): A process that eliminates all microorganisms except some bacterial endospores from inanimate objects. Processes include boiling, steaming or the use of chemical disinfectants.

Sterilization: A process that eliminates all microorganisms (bacteria, viruses, fungi and parasites) including bacterial endospores from inanimate objects. Processes include high-pressure steam (autoclave), dry heat (oven), chemical sterilants or radiation.

2.11.2 Key steps in processing instruments

All soiled instruments and other reusable items should be processed by decontamination, cleaning and either sterilization or HLD. Regardless of the type of operative procedure, the steps in processing surgical instruments and other items are the same. The steps are illustrated in the following figure.

Figure 10. Processing of instruments



Decontamination Tips

Decontamination is the first step in handling used instruments and other items.

- Use a plastic, non-corrosive container for decontamination to help prevent rusting
- Do not soak metal instruments that are electroplated (i.e., not 100% stainless steel) even in plain water for more than an hour because rusting will occur

Tips for cleaning instruments:

- Wear thick household or heavy duty utility gloves, protective eyewear (plastic visors, face shields or goggles/glasses) and a plastic apron while cleaning instruments and equipment
- Use soap for effective cleaning to remove protein, oils and grease because water alone is not as effective
- Liquid soap is preferred
- Wash instruments with a soft brush in soapy water to remove all foreign matter—until they are visibly clean
- Do not use abrasive cleaners (e.g., Vim® or Comet®) or steel wool as these products can scratch plastic or pit metal or stainless steel
- Rinse thoroughly to remove any soap residue, which can interfere with sterilization or HLD
- Dry items (or allow to dry) after rinsing, before sterilization or HLD

1.1.3 Preparing chlorine solution

Making chlorine solution (using liquid chlorine)

- Check concentration (% concentrate) of the chlorine product you are using
- Determine total parts water needed using the formula below
 - $Total\ Parts\ (TP)\ water = (\% \text{ Conc.} / \% \text{ Dilute}) - 1$
- Mix one part concentrated bleach with the total parts water required

Note: Chlorine should be prepared in small amounts on a daily basis because is a volatile agent.

Example: Make a dilute solution (0.5%) from 3.5% concentrated solution

- **STEP 1:** Calculate TP water: $(3.5\% / 0.5\%) - 1 = 7 - 1 = 6$
- **STEP 2:** Take 1 part concentrated solution and add to 6 parts water

Making chlorine solution from chlorine powder

- Check concentration (% concentrate) of the powder you are using
- Determine grams of bleach powder needed using the formula below
- $Grams/litre \equiv \frac{(\% \text{ dilute}) \times 1000}{\% \text{ concentrate}}$
- Mix measured amount of bleach powder with 1 litre of water

Note: Should be prepared centrally at a pharmacy by pharmaceutical personnel.



2.11.4 Differences between sterilization and HLD

Sterilization destroys all microorganisms, including bacterial endospores while HLD destroys all microorganisms (including vegetative bacteria, tuberculosis, yeasts and viruses) **except** some bacterial endospores.

Types of Sterilization:

- High-pressure steam (autoclave)
- Dry heat (oven)
- Chemical sterilants, such as glutaraldehydes or formaldehyde solutions
- Physical agents (radiation)

Sterilization procedure by autoclave: Consult the instruction manual of the autoclave. If the instruction manual is not available, follow instructions outlined in the National IPC Guidelines.

Sterilization procedure by dry heat oven: For complete instructions on using the dry heat oven, see the National IPC Guidelines.

Sterilization procedure by chemicals: Using chemicals is an alternative to high pressure steam (autoclave) and dry heat oven.

- This is used when the instruments can be damaged by oven or auto-clave sterilization, e.g. rubber or plastic materials
- Prepare fresh solution of chemical sterilant as prescribed by the manufacturer
- Check expiry date of the chemical solution
- Submerge cleaned and dried items
- Cover the container and soak for appropriate time (8 – 10 hours for glutaraldehyde or 24 hours for formaldehyde)
- Remove items by using sterile gloves or sterile forceps
- Rinse items thoroughly with sterile water
- Place the items in a sterile covered container

Types of HLD:

- Boiling in water
- Steaming (moist heat)
- Soaking instruments in various chemical disinfectants

HLD by Boiling: Boiling in water is an effective, practical way to high-level disinfect instruments and other items. Although boiling instruments in water for 20 minutes will kill all vegetative forms of bacteria, viruses (including HBV and HIV), yeasts and fungi, boiling will not kill all endospores reliably and thus will not achieve sterilization.

Instructions for HLD by boiling:

- Decontaminate and clean all instruments and other items to be high-level disinfected
- Immerse items **completely** in the water, if possible

- Adjust the water level so that there is at least 2.5 cm (1 inch) of water above the instruments
- Place lid on pot and bring water to a gentle, rolling boil
- Reduce heat to keep water at a rolling boil (boiling too vigorously wastes fuel, rapidly evaporates the water and may damage the delicate instruments or other items)
- Start timing; note time on the clock and record the time when rolling boil begins in the HLD log
- Do not open the pot or add or remove instruments once the timing has begun
- Keep at rolling boil for 20 minutes
- Remove items with HLD forceps/pickups
- Never leave boiled instruments in water
 - As the water cools and steam condenses, air and dust particles are drawn down into the container and may contaminate the instruments (Perkins 1983)
- Use instruments and other items immediately or, with HLD forceps, place in covered, dry HLD container and air dry
- See information on storage of items after HLD

Instructions for HLD using chemicals:

- Decontaminate and clean instruments and other items to be HLD
- Prepare fresh solution of chemical HLD
- Submerge clean, dry items in appropriate high level disinfectant (0.5% chlorine)
- Cover container and soak for 20 minutes
- Remove all items from chemical solution using HLD forceps or sterile gloves
- Rinse items thoroughly with HLD water
- Place in HLD, covered container and air dry
- Use immediately or store in a covered, dry HLD container

2.11.5 Storage of sterile and HLD instruments

Storage of sterile instruments:

- Store all sterile items protected from dust, dirt, moisture, animals and insects
- Ensure that the storage area is situated next to or connected to the location where sterilization occurs
- The storage area should be separate and enclosed, with limited access
- The storage area must be used just to store sterile and clean patient care supplies

Storage of HLD instruments:

- Storage in a closed cabinet free of dust and lint is preferred
- Label all stored instrument packs or containers with the date of processing
- In smaller facilities, the storage area may be just a room off the Central Supply Department or in the operating unit
- Store instruments in a dry, HLD covered container (the cover as well as the container must be HLD)
- Ensure that the HLD containers remain closed (no peeking) until the instruments are needed

- Reprocess them after one week, if the instruments have not been used
- Clearly label all stored instrument packs or containers with the date of processing

Handling Instruments

Sterile instruments: They must be handled only with sterile instruments (e.g., when removed from chemical sterilization solutions). They must be stored in sterile containers.

HLD instruments: They must be handled with HLD or sterile instruments (e.g., when taken out of the boiler or chemicals). They must be stored in HLD or sterile containers.

1.1.6 Shelf Life

REMEMBER:

Before using any sterile item, look at the package to make sure the seal is not broken and the wrapper is intact, clean and dry and has no water stains.

- The shelf life of an item (i.e., how long it can be considered sterile) after sterilization is event-related.
- The item remains sterile until something causes the package or container to become contaminated; time elapsed since sterilization is not the determining factor.
- An event can be a tear or worn area in the wrapping, the package becoming wet or anything else that will allow microorganisms to enter the package or container. These events can occur at any time.
- In some health care facilities where replacement of supplies is limited and the cloth used for wrapping is of poor quality, time as a limiting factor also serves as a safety margin.
- If plastic covers (bags) are unavailable for the sterilized items, limiting the shelf life to a specific length of time (e.g., 1 month) may be a reasonable decision as long as the pack remains dry and intact.
- Handle and store instruments according to how they are processed, maintaining at least the same level of processing in storing them that was used in processing them.

Session Twelve

Health Care Waste Management (HCWM)

By the end of this session, participants will be able to:

- Define common terms used in health care waste management
- Categorize waste according to its type
- Explain steps in health care waste management
- Explain the recommended methods for final waste disposal
- Explain how to handle contaminated waste
- Explain sharps disposal tips

2.12.1 Definitions

Health Care Waste: Health care waste is defined as total waste generated by medical activities and includes both contaminated (potentially infectious) waste and non-contaminated (non-infectious) materials.

Handling of Waste: Waste must be properly handled within the health care facility setting, even before it is taken for final disposal, to protect clients, staff and the community.

2.12.2 Types of waste

Non-contaminated waste is waste that poses no infectious risk to persons who handle it. Examples include paper, boxes, food remains, bottles and plastic containers. It can be picked up by the local authorities for disposal in municipal waste sites.

Contaminated waste is waste that is potentially infectious or toxic if not disposed of properly. Examples include blood, body fluids, secretions and excretions, and items that have come in contact with them, such as sharps and used dressings, as well as medicines, medical supplies or other chemicals that may be hazardous. They must be incinerated, burned or buried in designated contaminated/hazardous waste areas.

2.12.3 Steps in HCWM

Proper waste management involves the following steps:

1. Waste minimization
2. Segregation
3. Waste collection
4. Waste storage
5. Transport
6. Treatment or destruction
7. Final disposal

1. Waste minimization: Implement policies and standards to reduce health care waste generation through:

- Good management and control practices, e.g. pharmaceuticals and chemicals obtained through centralized purchasing
- Purchasing supplies that produce limited health care waste
- Use of recyclable products on site or off site
- Order supplies according to needs
- Use the oldest batch first (FEFO and FIFO² rules)
- Use all contents in each open container before opening another container
- Check expiry dates at the time of delivery and regularly

2. Segregation:

- Separate waste materials based on the type, treatment and disposal practices
- Separate waste at the point where it is generated
- Use bin liners/plastic bags in waste containers
- Collect and store waste in different coloured containers according to type of waste
- All health care facilities should apply the same colour-coding system throughout the country
- The colour-coding system ensures immediate and clear identification of the hazards associated with the type of health care waste that is handled or treated

Note: All health workers, working in the health facility should segregate waste at the point and time of generation. Never sort mixed waste (e.g., do not try to separate contaminated from non-contaminated after they have been mixed, rather consider them as contaminated.)

Recommended colour codes for segregation of health care waste

COLOUR OF THE CONTAINER	TYPE OF WASTE
Yellow	Safety box (puncture-resistant) for the following sharps: Needles and syringes, blades, broken glass, lancets, scissors, broken ampoules, slides and slide covers, etc.
Red	Wet, infectious materials: Blood, body tissues (amputations), body fluids (discharges), specimen (stool, sputum), placentas, wet dressings, catheters, blood infusion bags), etc.
Blue/Black	Non-infectious materials: Office papers, pharmaceutical packaging, plastic bottles, food remains, waste paper, etc.

3. Waste collection:

- Collect waste daily or as frequently as it is necessary
- Do not allow waste to accumulate at the point of production
- Remove waste from the segregation point after labelling
- Replace bags or containers immediately with new ones of the same type
- Supply fresh collection bags or containers at all locations where waste is produced

² FEFO = First Expired First Out; FIFO = First In First Out.

4. **Waste Storage:** Waste is stored to minimize cost of disposal. Ensure that the waste storage area:

- Has an impermeable, hard floor with good drainage, easy to clean and disinfect
- Is easily accessible to staff in charge of handling the waste
- Can be locked
- Has easy access for waste-collection vehicles
- Is not accessible to animals, insects and birds
- Is not near the fresh food stores or food preparation areas
- Is located near a water supply, cleaning equipment, protective clothing and waste bags

Example of Interim Waste Storage:



5. **Transport:** Process of transferring waste from one point to another.

On site transport: Health care waste should be transported within the health facility by wheeled trolleys, containers, or carts that are not used for any other purpose and are:

- Easy to load and unload
- Have no sharp edges
- Are easy to clean

Off-site transportation: Transfer of waste from facility to treatment or disposal site.

- All health care providers are responsible for safe packing and adequate labelling of waste
- All health care waste handlers must wear PPE
- Ensure that all waste handlers are properly trained in handling, loading and unloading, transportation and disposal of the yellow and red waste containers
- Facility management authorizes its final destination
- All vehicles shall be cleaned and disinfected after use

6. **Treatment or destruction of health care waste:**

- Incinerate, burn or bury infectious health care waste
- Ensure that incinerator and burial sites are fenced with a gate and lock to prevent scavenging by both animals and people
- Proper disposal of contaminated waste minimizes the spread of infection

Contaminated Solid Waste

- Dispose of contaminated waste into a waste container during or immediately following a procedure
- Decontaminate waste bins between each use
- Ensure that waste handlers wear appropriate PPE
- Discourage the practice of taking body parts (or placenta) home
- When body parts must be taken home for burial they should be placed in a plastic bag and then into a rigid container (metal or plastic container) for transport

Contaminated Liquid Waste

- Dispose of liquid infectious wastes (e.g. blood and urine) through a closed sewage or septic system by carefully pouring waste down a utility sink drain or into a flushable toilet
- Rinse the toilet or sink carefully and thoroughly with water to remove residual wastes; avoid splashing
- Dispose of liquids in a deep, covered hole (not into open drains) if a sewage system does not exist
- Treat liquid waste from all medical diagnostic laboratories separately in a buffer tank to be neutralized before being drained off into the sewage

In case of a cholera epidemic

- Disinfect the health facility sewage
- The causative agent of cholera is easily killed with the use of disinfectants
- Disinfect stool from patients with cholera contained in buckets with chlorine oxide powder or dehydrated lime oxide

7. Final disposal:

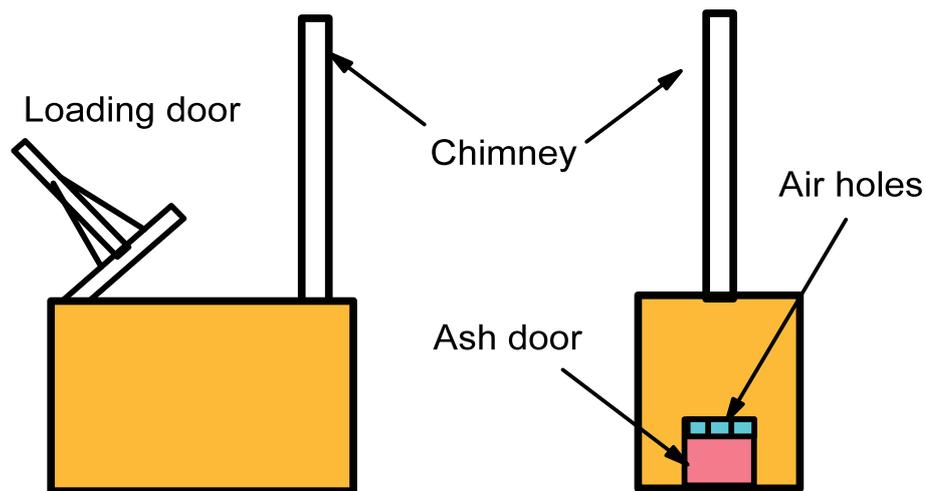
- Each facility should choose appropriate technology for waste disposal according to its size.
- The technology that minimizes the immediate public health risks associated with HCWM with the lowest impact on the environment is recommended.

2.12.4 Methods of final disposal

Incineration: This is a process in the deployment of high temperatures for burning waste (above 800°C).

- Incineration is used to burn waste at high temperatures, hence it destroys microorganisms and is the best method for disposal of contaminated wastes
- Incineration also reduces the bulk size of wastes to be buried
- Placentas and other anatomical waste can be disposed of in some incinerators
- Dispose of ashes from the incinerator in an ash pit
- Ensure that there is an efficient monitoring system for proper functioning of incinerators:
 - weighing waste and regular maintenance recommended
- Follow MoHSW guidelines in construction of incinerators

Figure 11. General View of a Double-Chamber (De Montfort) Incinerator

**Burning:**

- Rural health facilities can burn waste in burning pits as per MoHSW guidelines
- Do not burn waste on a flat surface.

Burying:

- Protect and bury waste in a burial pit and cover with fresh soil daily if incineration is not possible.
- Rural health facilities can use this option of disposal to dispose of placentas, sharps and other anatomical waste.

Use placenta pits:

- Placental pit should be away from health facility
- Should be deep enough
- Should have a cover

2.12.5 Handling contaminated waste

- Use appropriate PPE including utility gloves when handling wastes; avoid use of sterile and examination gloves
- Decontaminate and clean utility gloves between uses
- Wash hands after handling contaminated waste
- Avoid spills or splashes
- Avoid transferring contaminated waste from one container to another
- Follow manufacturer's instructions for disposal of chemicals and their containers.
- Equipment used to hold and transport wastes must not be used for any other purpose in the health care facility.

2.12.6 Sharps disposal

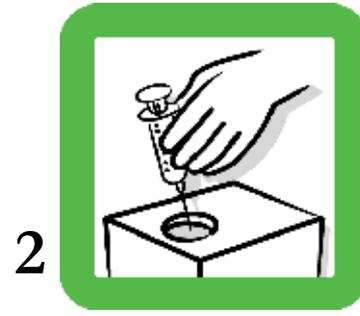
Prevent potential harm and transmission of disease from injury with a contaminated sharp object by following proper sharps disposal.

- Dispose of used sharps POINT FIRST into an approved sharps container
- Make sure that the sharps containers are out of reach of visitors and children
- Hold sharps containers away from your body
- Don't attempt to open a sealed sharps container

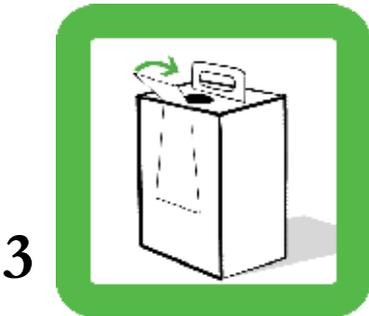
The figure shows the demonstration of safe use of safety boxes.



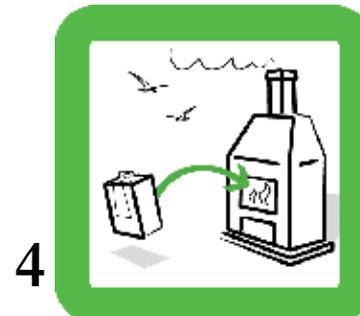
Open new, undamaged pack of syringe



Dispose used needle and syringe immediately



Close safety box when it is $\frac{3}{4}$ full



Destroy it in the incinerator

Session Thirteen

Traffic Flow and Activity Patterns Including CSSD

By the end of this session, participants will be able to:

- Define traffic flow and activity patterns in health care settings
- Explain organization of a surgical unit
- Explain the guidelines for working in an operating room
- Describe central sterilization and supply department (CSSD)

2.13.1 Definitions

Traffic flow and activity patterns refer to the regulation of the flow of visitors, patients and staff in order to prevent disease transmission in health care facilities. The number of microorganisms is related to the number of people present and their activities in a designated area.

Correct traffic flow minimizes the level of contamination in areas where patient care and instrument processing take place. Such areas include:

- Procedure areas
- Labour rooms and neonatal wards
- Pre-operative, operating and recovery rooms
- Intensive care units
- Work areas where instruments are processed and stored

2.13.2 Organization of surgical unit

The surgical unit is generally divided into four areas labelled and defined by their activities as follows:

1. **Unrestricted area:** Entrance from main corridor through which staff, patients and materials come into the unit.
2. **Transition zone:** Consists of dressing rooms and lockers where staff put on surgical attire to allow them to move from unrestricted to semi-restricted or restricted areas.
3. **Semi-restricted area:** The peripheral support area, includes pre-operative, recovery rooms, storage space for sterile and HLD items and corridors leading to the restricted area.
4. **Restricted Area:** Consists of the operating room(s) and scrubbing areas.

2.13.3 Guidelines for working in operating room

Before Surgical Procedures:

- Place a clean, covered container filled with 0.5% chlorine solution for immediate decontamination of instruments and other items once they are no longer needed.
- Place a plastic bag or leak proof, covered waste container for contaminated waste items (cotton gauze, old dressings).
- Place a puncture-resistant container for safe disposal of sharps at the point of use but

without contaminating the sterile field.

- Place a leak proof, covered waste container for soiled linen away from sterile items.
- Organize tables and ring stands side by side in an area away from the traffic patterns and without touching the walls, cabinets and other non-sterile surfaces.
- Place a clean sheet, a lift sheet and arm-board covers on the operating theatre bed.
- Check and set up suction, oxygen and anaesthesia equipment.
- Place supplies and packages that are ready for use on tables.

Note: Placing supplies on the floor is prohibited. The table and other non-sterile surfaces that are to be used during the procedure should be covered with a sterile towel or cloth.

During Surgical Procedures:

- Limit the number of staff entering the operating theatre to only those necessary.
- Make the surgical team self-sufficient.
- Keep the doors closed at all times, except during movement of staff, patients, supplies and equipment.
- Keep movements to a minimum.
- Keep talking to a minimum in the sterile field.
- Scrubbed and non-scrubbed members wear surgical attire as described in the guidelines.
- Scrubbed staff keep their arms and hands within the operative field at all times and touch only sterile items or areas.

After surgical procedures: Non-scrubbed staff wearing utility gloves should:

- Collect all waste and remove it from the room.
- Close and remove puncture-resistant containers when they are three-quarters full.
- Remove containers of chlorine solution with instruments and surgical gloves from the room.
- Remove soiled linen.
- Remove soiled instruments, equipment and supplies that have been opened but not used, in a leak proof, covered waste container. (Make sure that these items do not re-enter the restricted area.)

2.13.4 CSSD

The area where instruments and equipment are processed

- It is a semi-restricted area, so all recommendations for traffic patterns and proper attire described for the operating theatre should be adhered to.
- Staff must be specially trained in handling, processing and storing instruments, equipment and other clean, sterile or HLD items.

Storage and Rotation of Instruments and Supplies

For detailed instructions on proper storage and rotation, see the National IPC pocket guide.

Session Fourteen

Processing Linen

By the end of this session, participants will be able to:

- Define terms commonly used in processing linen
- Describe steps in processing, laundering and distributing linen

2.14.1 Definitions

Linen: Cloth items used by staff and patients/clients such as bedding, towels, cleaning cloths, gowns, caps, masks

Soaps or Detergents (terms used interchangeably): These are cleaning products (e.g., liquid and powder soap) that help remove dirt, debris and transient microorganisms from linen.

Soiled or Contaminated Linen: Linen from multiple sources within the hospital or clinic that have been collected and brought to the laundry for processing, regardless of whether or not they are visibly dirty.

Sorting: The process of inspecting and removing foreign and, in some cases dangerous, objects such as sharps or broken glass from soiled linen before washing

2.14.2 Processing, laundering and distributing linen

Processing linen:

- Staff must wear PPE as indicated when collecting, handling, transporting, sorting and washing soiled linen
- Consider all used linen infectious
- Carry soiled linen in covered containers or plastic bags to prevent spills and splashes, and confine the soiled linen to designated areas (interim storage areas) until transported to the laundry
- Carefully sort all linen in the laundry area before washing
- All linen items (e.g., bed sheets, surgical drapes, masks, gowns) used in the direct care of a patient must be thoroughly washed before re-use
- Soiled linen must be washed immediately to avoid staining

Note: Do not presort or wash linen at the point of use. Decontamination prior to washing is not necessary, unless linen is heavily soiled and will be hand washed. Decontamination of linen only takes place in the laundry

Laundering linen:

See National IPC Guidelines for Health Care Services in Tanzania and pocket guide for more detailed instructions on hand and machine washing.

Distributing clean linen:

- Protect clean linen until distributed for use
- Use clean trolley to distribute linen
- Handle clean linen as little as possible
- Do not leave extra linen in patients' rooms
- If not necessary, do not handle linen
- Avoid shaking clean linen. It releases dust and lint into the room
- Clean soiled mattresses by wiping with 0.5% chlorine solution and let them dry before putting clean linen on them



Session Fifteen

Housekeeping

By the end of this session, participants will be able to:

- Define housekeeping
- Explain the importance of housekeeping
- Identify selection criteria for cleaning products
- Explain uses of PPE in housekeeping
- Describe cleaning methods
- Explain cleaning schedules
- Describe housekeeping in the operating theatre

2.15.1 Definition

Housekeeping: The general cleaning of hospitals and clinics including the floors, walls, equipment, furniture and other surfaces as well as outdoor space.

- Entails the removal of dust, soil and microbial contaminants on environmental surfaces since they are potential sources of nosocomial infections.
- Manages space well to allow free movement and proper cleaning.

2.15.2 Importance of Housekeeping

General housekeeping

- Reduces number of microorganisms that come in contact with clients or staff
- Reduces risks of accidents by preventing falls caused by a slippery floor following spillage of either body fluids or solutions
- Provides a pleasant atmosphere

2.15.3 Criteria for selecting cleaning products

An ideal cleaning product should be able to:

- Suspend fats in water
- Make fats water-soluble
- Break up soil into small particles
- Break up protein
- Remove calcium and magnesium

2.15.4 PPE in housekeeping

Health care providers doing housekeeping activities should wear appropriate personal protective equipment to protect themselves. The recommended PPE for housekeeping activities are shown in the National IPC Guidelines for Tanzania.

2.15.5 Cleaning methods

Cleaning methods should be determined by the:

- Type of surface
- Amount and type of organic matter present
- Purpose of the area

Note: Do not mix chlorine solutions with ammonia-based detergents, as a toxic gas may be produced.

Wet Mopping:

- Process of using mop (with handle), soap (and in certain cases, disinfectant) and water to clean floors.
- Most common and recommended method to clean floors.

There are three techniques:

- **Single-bucket (basin) technique:** one bucket of cleaning solution is used
- **Two bucket technique:** one bucket for a cleaning solution and the other containing water for rinsing
- **Three bucket technique:** one bucket for a cleaning solution, one containing rinsing water plus a third bucket for wringing out the mop before rinsing

Damp Dusting is the process of cleaning surfaces such as walls, doors, and furniture using a wet cloth.

- A clean cloth is wet with cleaning solution contained in a basin or bucket.
- Avoid dry dusting. Never shake dust cloths or mops to avoid spread of microorganisms.
- Perform dusting in a systematic way; make sure all surfaces are reached.
- During high dusting (ceiling tiles and walls), check for stains that may indicate leaks. Repair leaks as fast as possible.
- Always wear utility gloves when cleaning surfaces that may have come in contact with blood, body fluids, secretions or excretions.

Note:

- Cleaning should start with the least soiled area and move to the most soiled area and from high to low surfaces.
- Using cleaning equipment that is not properly maintained can contribute to the spread of infectious agents.
- Dry all cleaning equipment completely before reuse; drying mops and cloths in the sun is best because the sun's ultraviolet rays can aid in killing microorganisms.
- Use properly maintained cleaning equipment to avoid spread of organisms

Cleaning Contact Surfaces

Surfaces that come in contact with clients, such as examination tables and patient beds, must be kept clean and decontaminated to avoid cross-infection.

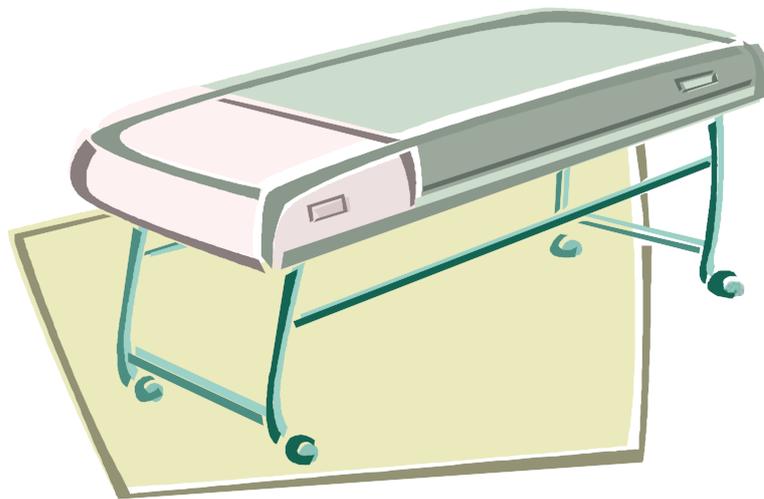
- Wipe them with a disinfectant solution (0.5% chlorine) after every client, regardless of whether they are visibly contaminated or not.
- Clean most areas of the facility with detergent and water (low-risk areas such as waiting rooms and administrative areas).
- Wipe any surface that is visibly contaminated using 0.5% chlorine solution immediately after the procedure.
- Clean high-risk areas where heavy contamination is expected with a disinfectant cleaning solution (0.5% chlorine with detergent).

Cleaning Spills involves the removal of spills of blood, body fluids, secretions or excretions.

- Decontaminate small spills by wiping with a cloth soaked in disinfectant solution (0.5% chlorine).
- Decontaminate large spills by flooding with disinfectant solution (0.5% chlorine); if feasible, allow the solution to sit for 10 minutes before mopping up, but do not create a hazard whereby someone might slip and be injured.

2.15.6 Cleaning Schedules:

Schedules should be established for routine cleaning. These cleaning schedules should be developed according to the needs of each area of the health care facility; they will vary by contamination levels. Terminal cleaning in the operating rooms must take place every day, whether the room was used or not. Written guidelines for general housekeeping should be developed and posted. Collaborate with outsourced cleaning agencies in order to abide to the National IPC standards and guidelines.



2.15.7 Housekeeping in the operating theatre

Frequency	Process
At the beginning of every day	All flat (horizontal) surfaces (tables, chairs, etc.) should be wiped with a clean, lint-free moist cloth to remove dust and lint that may have collected overnight.
Between every case	Wipe all surfaces and mattress pads with a disinfectant cleaning solution . Wipe all flat surfaces that have come in immediate contact with a patient or body fluids with a disinfectant cleaning solution .
At the end of every day	Do a total cleaning or terminal cleaning (mopping floors and scrubbing all surfaces from top to bottom) of the operating theatre at the end of each day. (Remember to clean door handles, light switches, etc.)

Session Sixteen

Infection Prevention in Home-Based Care

By the end of this session, participants will be able to:

- Define home-based care
- Describe the issues to consider in preventing infection in home-based care
- Explain instructions for home-based care
- Explain the guidelines on how to prevent infection in home-based care

2.16.1 Definition

More and more people are being care for at home, often by family members. This is due to the fact that the prevalence of chronic diseases (TB, HIV/AIDS etc.) is on the increase. This poses a risk of acquiring infections to families, caregivers and other community members.

2.16.2 Issues to consider in home-based care services

Health care providers have a responsibility to educate the families and caregivers about the risks posed by providing health care to patients in the home, and health care providers also need to inform caretakers about the infection prevention practices that can reduce the risks. Family members should adhere to the IPC standard precautions, including hand hygiene.

2.16.3 Instructions for home-based care

- Keep patients in rooms with fresh air and plenty of light.
- Ensure that patients take any prescribed medication completely, as ordered.
- Make sure that patients have clean and dry clothing and bed sheets at all times.
- Change bedridden patients' positions every two hours to prevent bed sores.
- Wash clothing and cloth or plastic sheets, with soap or detergent and dry in full sunlight.
- Cloth should be ironed.
- Wear gloves when direct contact with tissue under the skin, blood, body fluids, secretions or excretions is expected.
- Ensure that women using sanitary pads, or pieces of cloth dispose of them like contaminated solid waste.
- Encourage patients with cough to carefully cover their mouths with a handkerchief (preferably) or their hands when coughing.
- Encourage patients with diarrhoea to use a toilet or latrine, and to carefully wash their hands with soap and clean, running water after every bowel movement and before eating, handling or preparing any food or drinks.
- Cover mattresses and the like with plastic sheets that can be easily decontaminated and washed.

2.16.4 Guidelines on how to prevent infections in home-based care

For any procedures where the skin may be broken, and there may be contact with an open wound or sore, blood or other bodily fluids and secretions, caregivers must use the following guidelines:

- Ensure hand hygiene
- Use gloves and plastic aprons when contact with blood and body fluids is anticipated
- Dispose of all materials that have come in contact with blood, body fluids, secretions or excretions carefully so that they do not pose a risk to members of the community
- If materials are to be reused, decontaminate them in 0.5% chlorine solution, clean and high-level disinfect them in 0.5% chlorine solution
- Store contaminated waste in designated container
- Dispose of any cloth or plastic sheets that come in contact with blood, body fluids, secretions or excretions; if they are to be reused, decontaminate them in 0.5% chlorine solution for 10 minutes, wash with soap or detergent, and dry in full sunlight (and iron the cloth)
- Wipe surfaces (e.g., mattresses, tables) that may have been in contact with blood, body fluids, secretions or excretions with a cloth that has been soaked in 0.5% chlorine solution.
- Burn and bury all materials that have come in contact with blood, body fluids, secretions or excretions (cloth or plastic sheets, razor blades, gloves, etc.); this is the best procedure.
- Waste should be buried in a deep hole and completely covered with soil so that it is not accessible to community members, children or animals; it can also be disposed of in a deep pit latrine
- Wear utility gloves when handling and disposing of contaminated waste products

Note: Refer to HCWM guidelines for waste pit specifications and other disposal options.

***Who Benefits from
Practicing Good IPC?
We all do!***

Session Seventeen

Community Roles in QI-IPC



By the end of this session, participants will be able to:

- Create awareness on IPC issues to improve health at household level
- Identify correct community messages on personal hygiene, methods for rendering water safe for consumption, food hygiene, safe handling of human excreta, and waste management
- Describe how to spread these messages

2.17.1 Health awareness and understanding

- No lasting change in behaviour will occur without health awareness and understanding; people must **believe** that better hygiene and sanitation will lead to better health and better living.
- Many of the great improvements in health have been due to education and recognition of the relationship between public and private sanitation facilities, behaviour and disease transmission routes. *(From Jhpiego/Kenya Orientation Package)*

2.17.2 Community messages

Personal Hygiene

- Personal hygiene is an individual responsibility that limits spread of infectious diseases
- Wash hands every time you perform household activities
- Wash your body daily using clean, adequate water with plain soap
- Wear clean, dried, and ironed clothes daily
- Use a clean cloth or towel to dry your body or after washing hands
- Use body lotion and jelly to care for your skin
- Brush your teeth with toothpaste daily
- Keep nails short and clean
- Practice personal hygiene to enhance personality

Methods for rendering water safe for consumption

Each household should be responsible to ensure that they have safe and adequate water hence:

- Collect (fetch) water from authorized sources

- Collect (fetch) water using clean containers with a lid
- Treat drinking water by boiling or using chlorine e.g. water guard or other approved methods
- Store water in a clean container with a lid, preferably one with a narrow mouth to prevent hands or utensils from touching the clean water. Avoid topping up
- If the container has no tap, use clean, designated jug for taking water from storage container
- Filter or allow water to settle if it is turbid, pour off the clean water and treat it by one of the following methods:

By Boiling

- Boiling water for 5 minutes makes it safe to drink or to use in making oral rehydration solution (ORS) and infant formula (count from rolling boil).
- Boiled water is easily contaminated because, unlike chlorinated water, it does not have any residual capacity to inactivate microorganisms

By using chlorine

- Add a small amount of a chlorine-releasing compound such as sodium hypochlorite. For example, only 10 mL (2 teaspoons) of a 0.5% chlorine solution are needed to make 20 litres (over 5 gallons) of water that is safe to drink. Waterguard can also be used according to directions.

Note: Chlorination is not as effective in turbid (cloudy) water because the organic material combines with the free chlorine, reducing the concentration in the treated water.

Prevent the Spread of water borne diseases (e.g. cholera):

- Cholera is spread through contaminated water
- *Vibrio cholerae* are the bacteria causing cholera
- To decrease the incidence of cholera, treat the drinking water

Note: Same messages apply to facility staff.

Food Hygiene

Observe principles of hygiene in food preparation, storage and serving:

- Wash hands before and after food preparation
- Use clean food preparation utensils
- Use clean water
- Store food items in insect and dust proof cupboard
- Keep food in a clean-dry container with clean tight lid
- Eat freshly prepared food and when food is hot
- Wash utensils immediately after use and dry them
- Store clean utensils in a clean place free from insects, vermin and dust
- Collect and dispose immediately wastes (solid and liquid) generated during food preparation, serving and washing of utensils after the consumption of food

Messages on safe handling of excreta

Safe handling of excreta prevents and control excreta-related diseases including diarrhoea.

Messages for safe handling of excreta:

- Dispose of all excreta in acceptable latrines

- Everyone handling excreta and or using toilets must wash hands with soap and running water
- Individuals with diarrhoea must report to nearby health facility immediately
- All materials that have come in contact with blood, body fluid, secretions and excretions must be burned and buried
 - This includes tissues or cloth used for coughing or expectorating.

Messages on waste management

- Waste at household level attracts vermin, e.g. rats and flies, which act as vectors in the transmission of diseases
- Waste management is important in prevention and control of infections in the community
- Separate solid waste from liquid waste to facilitate disposal, re-use and avoiding possible injury
- Avoid littering streets and other public places

Solid waste messages

- Household members to collect the solid waste generated daily to make the house and its surroundings clean
- Store solid waste in acceptable container (e.g., standard dust bin with liner or improvised container such as used drums or bucket)
- Dispose of waste using acceptable method such as waste pit
- Clean the container immediately with clean water and soap after disposal where liners are not used
- Wash hands with clean water and soap
- Do not burn solid waste on the open ground

Liquid waste messages

- Collect liquid waste using durable and easy to handle container in order to prevent splash or spillage
- Dispose of liquid waste using recommended methods (e.g., pit-latrines)
- Clean the container immediately with clean water and soap after disposal
- Wash hands with clean water and soap after handling liquid waste

2.17.3 How to spread your messages

In collaboration with stakeholders, use communication media preferred by your people/audience (e.g., local radio, TV, ngoma, cinema, etc.) to convey all these messages as well as:

- How to prevent the infections that commonly occur in the locality (e.g., the top ten diseases) focusing on:
 - Modes of transmission and control
 - Important precautions to take in IPC

Important things to consider:

- Have open communication with the community about infection trends so that they are taken on board for control
- Clearly identify proper communication channels
- Adhere to your professional ethics in delivering services and day to day life

Module Three

Logistics

Session One

Logistics Management

By the end of this session, participants should be able to:

- Define various terms used in logistics management
- Explain the Six Rights of the logistics system
- Explain the components of a logistics circle

3.1.1 Definitions

- **Logistics:** The coordinated effort of planning, procurement, delivery, and inventory systems, working together to bring supplies to clients.
- **Push system:** When higher levels determine supply quantities to order for lower levels.
- **Pull system:** When lower level health facilities decide how much supply they require to order. Also called “Indent” or “requisition system.”
- **Minimum level:** Amount of stock that the health facility should not fall below under normal circumstances.
- **Maximum level:** Amount of stock that the health facility should not exceed under normal circumstances.
- **Ending balance:** Quantity of stock on hand at a given period as determined by physical count.
- **Safety stock:** The amount of supplies kept as reserve (buffer) in order to avoid ‘Out of Stocks.’
- **Bin cards:** Stock keeping card that keeps information on a single lot of a given product.
- **Stock registers:** Tools that monitor stock movements and status.
- **Physical inventory:** Counting by hand the number of units available by expiry dates.
- **Minimum months of supply:** Amount of supplies expressed in months below which stocks should not fall under normal circumstances.
- **Maximum months of supply:** Amount of supplies expressed in months above which stocks should not exceed under normal circumstances.
- **Requisition and issue voucher:** Lists the items and quantity received and issued in the facility.
- **Inventory management:** The process of procurement, receiving, storing, issuing, ordering and distribution of commodities to various sites.
- **Integrated Logistics System (ILS):** A system whereby there is a delivery of commodities (order, procure, transport and storage) to facility and a service delivery point where effective provision to customers takes place.

- **Supply Chain Management:** Describes the management of commodities from selection, quantification, ordering, procurement, and distribution.

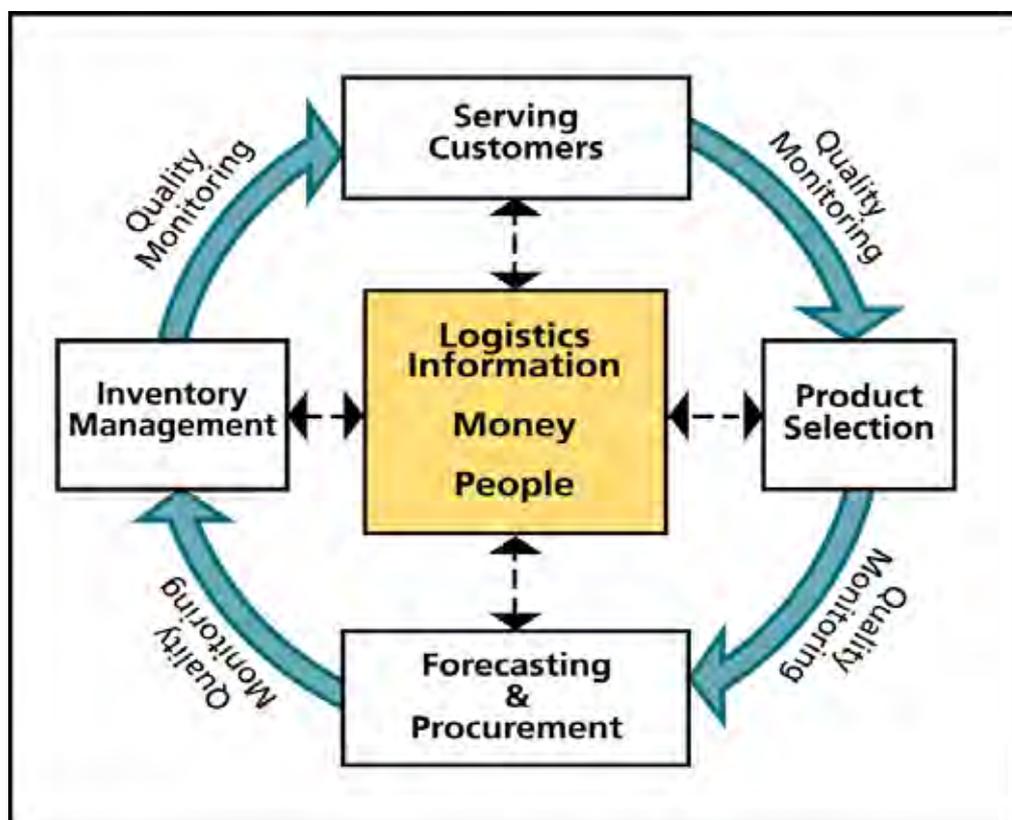
3.1.2 The Six RIGHTS of the logistics system

A logistic system provides effective service to the RIGHT customer by fulfilling the six “rights”:

The RIGHT goods in the RIGHT quantities in the RIGHT condition, delivered to the RIGHT place at the RIGHT time for the RIGHT cost.

3.1.3 Logistics cycle

Figure 13. Logistics cycle



Component of the Logistics Cycle

- **Serving customers:** This is the priority of the cycle
- **Product selection:** Select products according to their use, e.g., for IPC, PPE (such as gloves, boots, aprons, protective eyewear, masks, etc.)
- **Forecasting:** The projection of actual needs based on collected data i.e., consumption data
- **Procurement:** The process of buying the selected products by appropriate procedures like tenders, contracts, etc. It entails financial resources, technical skills and management systems.
- **Inventory management:** The process of receiving, storing, issuing, ordering and distribution of injection safety supplies.

- **Logistics Management Information System (LMIS):** It is the engine which drives the logistics system. The information the LMIS gathers allows managers to make decisions. Every function in the logistics cycle needs accurate information in order to work.
- **Quality monitoring:** An essential function at all stages of the logistics cycle. Constant corrective action based on current, accurate information is the key to success.

Other components not included in Logistics Cycle

- **Policy:** The logistics system in Tanzania is governed by the Public Procurement Act of 2004. This act states that ordering at the district level should be done by a district pharmacist and or supplies officer every seven months and at the facility level on a quarterly basis.
- **Adaptability:** The CHMT is responsible for ordering at the district level and at hospital level it involves a hospital committee (heads of the departments). At the dispensary/health centre level ordering involves the in-charge of the facility, village chairperson and ward executive officer.

Session Two

Inventory Management

By the end of this session, participants will be able to:

- Describe the components of an inventory management system

3.2.1 Components of inventory management include:

- Determining order quantities
- Receiving commodities
- Storage
- Issuing commodities
- Records
- Reporting

A. Determining ordering quantities

The logistics data that will be taken and transferred to the Requisition and Report (R&R) form include:

- Opening balance
- Quantity received this reporting period
- Losses and adjustments
- Closing balance
- Estimated quarterly consumption quantity needed

There is a need to establish what is in stock before determining quantities to order. This is done through Physical Inventory.

Estimated quarterly consumption: It is the estimated total quantity of a product put in the hands of a client during the quarter.

Average Monthly Consumption Rate (AMCR)

- It is the average number of each commodity issued/dispensed to clients/patients in a given month.
- It helps to determine the amount of each commodity to be kept on hand to avoid out of stocks.
- AMCR has to be reviewed quarterly and adjusted according to the current consumption trends.

How to calculate AMCR

$$\text{AMCR} = \frac{\text{Total consumption}}{\text{Total months (in a specified period)}}$$

Example:

Facility A in Kilombero pharmacy district used the following number of 2 ml syringes.

January	2100
February	2800
March	2000

What is the average monthly consumption rate for this facility?

Answer:

Total number of syringes consumed in 3 months = 2100 + 2800 + 2000 = 6900

$$\text{Therefore, AMCR} = \frac{6,900}{3} = \underline{2,300}$$

Formula for estimating quarterly consumption:

Opening Balance	+	Received This Period	+ or -	Losses/ Adjust- ments	-	Closing Balance	=	Estimated Consumption
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Formula for quantity needed:

$$\text{Quantity to order} = \text{AMCR} \times 3 - \text{CB}$$

Note: CB means Closing Balance.

B. Receiving commodities

- The following must be done as commodities are received:
 - Ensure supplies received tally with R&R form and Medical Stores Department (MSD) Sales Invoice- Form 4
 - Dispatched commodities are self-verified
 - Open cartons with a village health committee member and two other witnesses (dispensary and health centre)
 - Receiving Officer checks expiry dates and batch numbers
- Fill Form 7 (Verification and Claim form in case of any discrepancies, damage or unaccepted shelf life) and all three witnesses must sign
- A copy of Form 7 is retained at the facility, a copy sent to the District Medical Officer (DMO), and original sent to the supplier
- Update record, i.e. bin card or stores ledger
- Sign the issue voucher and file it
- Look for the statement of account for the facility Form 5: Customer Statement of Account

C. Storing

Storing is safe keeping of medicines and related supplies to avoid spillage and theft. Storage layout refers to a plan that makes the maximum and best use of the available storage space.

Principles of storage

- Store fast moving commodities in an easily accessible place
- Store each type of commodity in the same area
- Store the unusable and expired commodities in a segregated place
- Keep all commodities off the floor (palleting)
- Keep fire safety equipment available, accessible and functional and train employees to use it

D. Issuing commodities

- Different commodities have different maximum/minimum levels
- Review the Issue Voucher for:
 - Correctness of referenced information
 - Correctness of determining issue quantity
 - Correctness in filling the issue/receipt voucher
 - Correctness of the issue/receipt voucher

E. Records

A record is a collection of related data items

Types of records:

- Stock Keeping, e.g., Bin Cards, Inventory Control Card and Stores Ledger
- Transaction, e.g., Packing list
- Records, e.g., Issue Vouchers, Registration and Issue Vouchers
- Consumption records, e.g., Daily Activity Register and Tally Sheet

Description of records:

- **Bin Card:** An individual stock keeping card that keeps information about a single brand of a given product
- **Inventory Control Card:** An individual stock keeping card that keeps information about a lot of a product
- **Stores Ledger:** Unlike an inventory control card, a stores ledger is bound like a book
- **Consumption records:** Records the quantity of each item dispensed to customers. The data contained in this report therefore is user data

F. Reporting

Reporting in ILS is based on the following indicators:

- Timeliness of reports
- Accuracy of reports
- Completeness of reports

Module Four

BCC in the context of QI- IPC

By the end of this module, participants will be able to:

- Define behaviour and behaviour change
- Name the stages of change
- Describe enabling factors and barriers to behaviour change
- Describe the desired and undesired behaviour change of health care workers
- Describe the process of interpersonal communication
- Explain IPC performance standards and how they can be verified

3.4.1 Definitions

Behaviour is an action.

Behaviour change is a process of how people modify problem behaviours (**unsafe practices**) or acquire positive behaviours (**safe practices**).

Helping health care workers learn and practice the skills, attitudes, and intentions is important for a successful integration of behaviour change. Behaviour change is one of the key strategies for IPC and QI of health care services in general. To promote health and improve the quality of life, individuals or group should change their attitude for voluntary adoption and maintenance of a new behaviour in IPC and QI.

3.4.2 Stages of change

Change implies the process occurring over time; it involves five stages:

1. **Pre-contemplation stage:** People are not intending to take action in the foreseeable future because they are uninformed or under informed about their behaviour, or they may have tried unsuccessfully to change a number of times previously and have become demoralized.
2. **Contemplation stage:** People are intending to change after being given some specific information. They are aware of positive and negative effects of change. This balance between the costs and benefits of changing can produce profound ambivalence that can keep people stuck in this stage for long period of time.
3. **Preparation stage:** People are intending to take action in the immediate future.
4. **Action stage:** People have made overt modifications in their practices. Since action is observable, behaviour change often has been equated with action.
5. **Maintenance stage:** People are working to prevent regression but they do not apply change processes as frequently as people do in action.

3.4.3 Enabling factors and barriers to behaviour change

Enabling factors

- The health care worker must truly desire to do right for their patients/client
- S/he must appreciate that the best practices can prevent infection

- There must be uninterrupted and adequate availability of supplies/commodities

Factors that influence behaviour are either internal or external. **Internal factors** are within an individual e.g., attitude, knowledge, skills and competences. **External factors** can be environmental e.g., supportive supervision, human resources (manpower) and/or non-human resources (finances, supplies, equipment, etc.).

Internal Factors

- Belief that they are protecting both patients/clients and themselves from harm
- Knowledge and skills to perform the procedure

External Factors

- Supportive work environment with dissemination of easy to follow/user friendly guidelines, standards and Information, Education and Communication (IEC) materials as well as monitoring and evaluation
- An enabling environment with availability of supplies and medication necessary for IPC
- Capacity building and on-the-job trainings using change agents to guide desired behaviours
- Advocacy and social mobilization within the community
- Recognition and reward for performance, including incentives for good professional practices

Barriers

- Inadequate knowledge and skills
- Inadequate supplies
- Ineffective communication system in operationalizing services
- Inadequate coordination and supportive supervision at all levels
- Inadequate adherence to the recommended IPC and QI policy guidelines and standard procedures
- Limited knowledge and practices among community members on IPC
- Lack of culture of quality in health care system among health care workers at all levels and other stakeholders
- Inadequate team work spirit among health care providers and managers of health facilities
- Unethical behaviour among health care

3.4.4 Desired behaviour change among health care workers

Experiences found in implementing IPC and QI

- Limited practice of IPC and QI by health care workers
- Limited supportive system towards implementation
- Low level of motivation among health care workers to follow standard procedures
- Embedded stigmatization among health care providers toward some IPC practices

Why don't health care workers change behaviour?

- Do not know all the steps
- Do not believe that the steps are all important
- Are too hurried to carry them out
- Lack necessary supplies and have not been able to obtain them in the past
- Are uncomfortable doing new and/or different steps

Desired behaviours of health care workers

- Health care workers to practice IPC and QI according to existing guidelines
- Health managers to ensure availability of adequate, quality and consistent supplies
- Open communication on IPC and QI among health managers, stakeholders, providers and the community
- Health management teams to conduct regular supportive supervision geared towards IPC and QI

Exercise on undesirable behaviours of health care workers

Can you name some IPC practices you have seen which should be avoided?

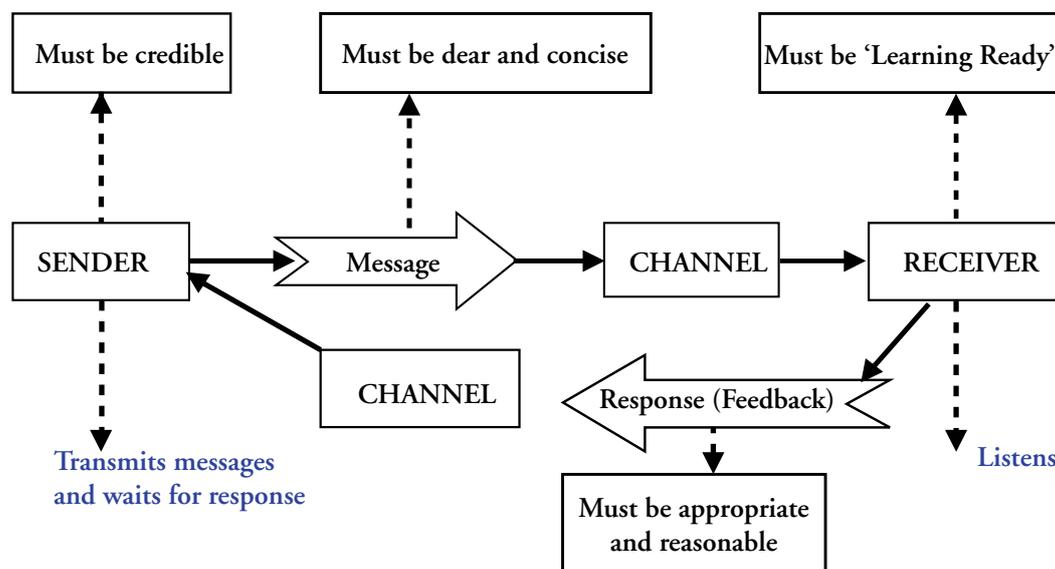
Examples for discussion can be:

- Recapping of needles
- Re-use of syringes and needles
- Overuse of therapeutic injections/unnecessary prescription of injections
- Mixing medical waste
- Sorting waste after mixing
- Overfill of safety boxes
- Poor handling of safety boxes
- Caring for patients/clients without washing hands
- Inserting an IV line without wearing gloves, especially for staff providing anaesthetic medication
- Sticking needles in IV, drips/ampoules
- Cleaning used instruments without prior decontamination
- Sorting soiled linen in patient care areas
- Washing soiled linen without sorting
- Dry sweeping in patient/client care areas
- Using improperly processed instruments to care/operate on patients
- Passing sharp objects hand-to-hand
- Using chlorine solution of unknown strength or made from expired chlorine compound

3.4.5 Interpersonal communication skills

Interpersonal communication is the social interaction between the sender and the receiver through an appropriate channel. Effective communication is a two-way traffic as illustrated in the figure below:

Figure 14. Effective communication



Interpersonal communication skills and supportive feedback in IPC-QI

Communication is a vital part of IPC for the management of hospital acquired infections. Health care workers and managers need to be able to communicate effectively with each other about roles, expectations, and needs in order to provide quality care for patients. Health care workers must be able to communicate with clients and family members respectfully and at an appropriate level to gain their cooperation.

There are two types of communication/facilitation skills:

- **Verbal:** Questions i.e., open ended, closed questions, clarifying; or paraphrasing
- **Non-verbal:** Body language and signs

3.4.6 Performance standards for BCC in IPC

Performance standards (in the health care system) are specifications which if attained would lead to a minimum acceptable level of quality in health care delivery system. They serve as basis for making judgment on the level of excellence in performance. An example of three such standards might be:

Example of BCC Performance standards in IPC

Performance standards	Verification criteria	Y, N, NA	Comments
Health provider establishes and maintains rapport with the client	<ul style="list-style-type: none"> • Greets client • Calls client by name • Introduces her/his self to the client • Introduces her/his role to the client • Maintains client comfort • Ensures audio and physical privacy • Recognizes persons accompanying client • Keeps client informed of what to expect throughout care • Provides feedback to client throughout care • Communicates in a manner that is culturally appropriate to the client 		
The health provider conveys essential messages to the client	<ul style="list-style-type: none"> • Covers topic sufficiently • Provides accurate information • Uses proper presentation • Uses appropriate language • Utilizes health education materials, i.e., leaflets, flyers, posters, etc.. 		
The health provider confirms the understanding of the client	<ul style="list-style-type: none"> • Asks targeted questions aimed at verifying understanding • Invites client and those accompanying her to ask questions • Requests/seek translation as required to ensure patient understanding 		

Case Study III: Busy Amos in the Out-Patients Department (OPD)

Amos is the newly trained nurse at the Mutare Provincial Hospital Out-Patients Department, who has just resumed duty in the treatment room on a busy Monday morning. Outside the room is a long queue of patients waiting for treatment. He gets the card of the next patient; while reading the prescription on the card he is called to answer the telephone.

On returning, the patient whose card he was reading before the phone call had gone to the toilet. He called 'next!' and the next patient in the queue walks in. Amos washes his hands, checks the dose on the card and draws the exact amount of 80mg gentamycin into a newly opened 2mls Vanish Point Retractable syringe from his clean injection trolley.

The patient tried to draw his attention that he had not come for an injection but for a dressing but because Amos is in a hurry to clear the patients, without paying attention, he asked the old man to get behind the screen for the injection the doctor had prescribed for him.

Amos went ahead and gave the injection in the outer upper quadrant of the left buttock and immediately dropped the used syringe and needle in a safety box supplied by John Snow, Inc. The patient began to sweat and shiver immediately.

Questions

- *What did Amos do right?*
- *What did he do wrong?*
- *Is the communication process by Amos effective? Why?*

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